MANUAL

OF THE

BIRDS

OF

NEW ZEALAND

BY

WALTER L. BULLER.

FOR THE PEOPLE
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FOR SCIENCE

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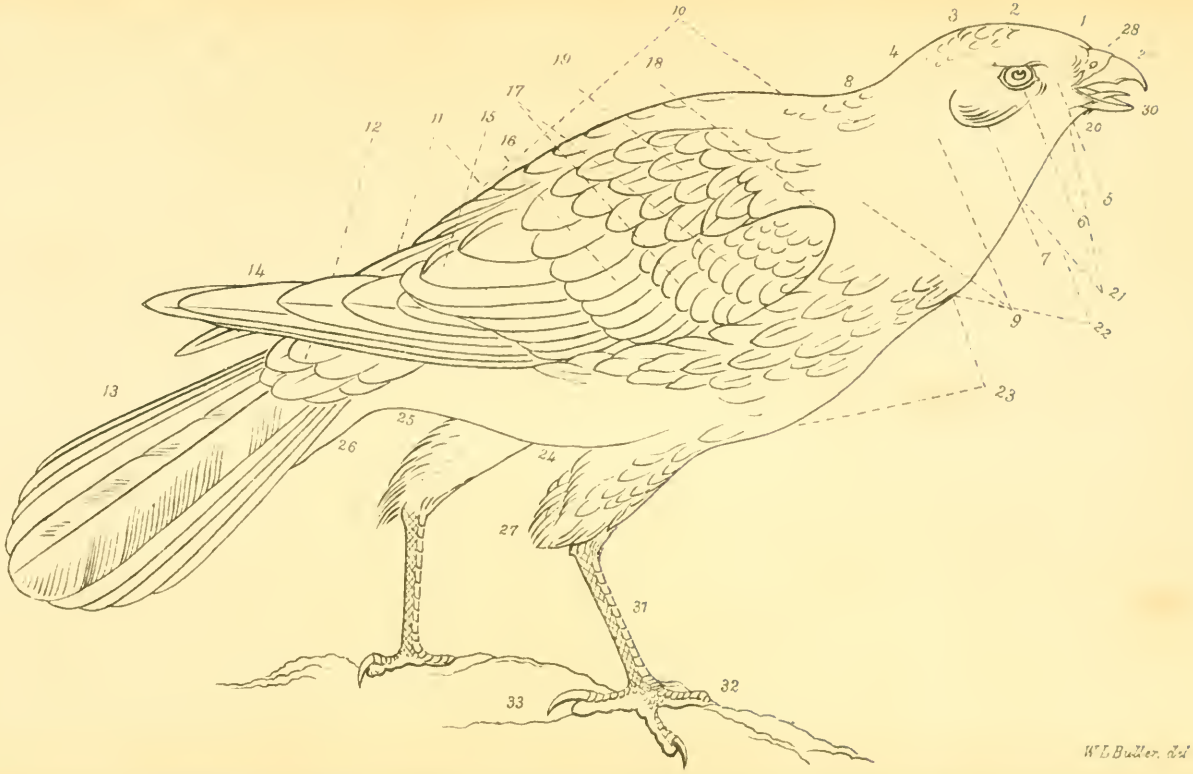

DIAGRAM of a Bird (*Circus gouldi*) to illustrate the technical terms used in describing the various species.

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Colonial Museum and Geological Survey Department.

JAMES HECTOR, C.M.G., M.D., F.R.S.,
DIRECTOR.

MANUAL

OF THE

BIRDS OF NEW ZEALAND.

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BY

WALTER L. BULLER, C.M.G., Sc.D., F.R.S.,

AUTHOR OF "A HISTORY OF THE BIRDS OF NEW ZEALAND."

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PREFACE.

The Catalogue of the Birds of New Zealand published by this department in September, 1871,* having been long out of print, and there being a general demand for something to take its place, Dr. Buller has prepared the following Manual for the use of students in the colony, in anticipation of a more comprehensive work on the subject which he has in progress. As a matter of convenience, the author has consented to adopt the classification, as well as the descriptive portion,† of the above-named Catalogue, introducing only such corrections in the text as appeared to be absolutely necessary, and altering the nomenclature in accordance with his own published views on various disputed points. At the same time all doubtful forms have been expunged, while the newly discovered species have been added, bringing the total number up to 176; and brief sketches of life-history have been incorporated, drawn almost entirely from the author's classical "History of the Birds of New Zealand," a work of such merit that, although it has only been published for eight years, it is now considered a book of rare value. The accompanying plates are reductions, by a new application of photo-lithography, from the

* Catalogue of the Birds of New Zealand, with Diagnoses of the Species. By F. W. Hutton, F.G.S., Assistant Geologist. Wellington, 1871.

† All measures are in inches and decimal parts of an inch. L. means the length from the tip of the bill to the end of the tail; B. means the length of the bill, from the tip to the gape; W. means the length of the wing, from the flexure, or carpal joint, to the point (in the Penguins the whole length of the wing); T. means the length of the tarsus, or lower part of the leg.

inimitable drawings by Keulemans which form the coloured illustrations to that work, with the addition of four more, copied from other sources. The woodcuts, in illustration of the generic characters, were specially executed for this Manual.

JAMES HECTOR.

Colonial Museum,
Wellington, 2nd January, 1882.

ADDENDA ET CORRIGENDA.

Page 3.—*Insert*, before *Circus gouldi*, the generic characters as follow:—

Circus. *Lacep.*

Upper mandible festooned; third and fourth quills, nearly equal and longest; legs, slender.

World-wide distribution.

INTRODUCTION.

Observations on the range and habits of our birds is the kind of information that we look for from residents in the country, and are most desirous of encouraging. But, for the guidance of those who may be anxious to go a step further and describe for themselves any new form that may be discovered, I beg to offer the following hints and suggestions :—

It is comparatively easy to describe a bird for all practical purposes, that is to say, with sufficient definiteness to entitle the description to general respect, and to establish the author's claim to the right of priority in naming the species. The first thing to be done is to take the measurements, and in expressing these the formula of inches and decimal fractions will be found the most convenient. The following are those which are usually considered sufficient: The extreme length; the full extent of the expanded wings; the wing from the carpal flexure to the end of the longest primary; the tail, from the root to the end of the longest feathers; the culmen, measuring from the base of the mandible to the tip, following the curvature, if any; the lower mandible from the gape to the tip; the tibia, if bare; the tarsus; the middle toe and claw; the hind toe and claw.

In taking the extreme length, my rule has always been to measure from the tip of the bill, following its curvature, if any, to the end of the tail. The advantage of this plan is that by deducting the measurements of the culmen and the tail, which are given separately, you obtain the exact length of the body. This is only useful, however, for purposes of comparison, because the measurements of a bird

stretched at full length do not afford any correct idea of its relative size as a living bird.

Next, as to form and colour. In order to make the description intelligible, some knowledge is essential of the names usually applied to the various parts of a bird, and to the feathers which cover them. The diagram which forms the frontispiece to this work, with the references, will I hope be found useful as an explanatory index to the terms commonly used in describing a bird. The bird selected for the outline is our common Harrier (*Circus gouldi*). The technical terms may be multiplied to almost any extent, but for the sake of simplicity I have indicated those only of which a knowledge is absolutely necessary.

The definition of colours in their endless diversity of tone and shade is perhaps the most difficult part of the task, owing to there being no recognized or commonly-received standard of nomenclature. Every naturalist has, to some extent, a standard of his own, and we repeatedly find different terms used by different writers to express the same particular idea of colour and shade. There is less danger of inconvenience or confusion from this cause in a large establishment like the British Museum, or the Natural History Museum at the Jardin des Plantes, where all describers have daily access to certain well-known types, and where, in consequence, there is a common understanding as to what is intended to be expressed by such stock terms as "ashy," "dusky," "cinereous," "rufous," "fulvous," "olivaceous," and the like. But the flexibility of our language enables a describer, by the exercise of a little skill and judgment, and the free use of qualifying adjectives, to express with precision almost every shade of colour by the use of such compound words as "clear brownish-grey," "delicate purplish-grey," &c., with the help also of the comparative term, as for example, "darker towards the base," or "lighter towards the tip." A good deal of practice, however, in describing colours and their distribution is necessary to make an expert in the art, so that a written description may have the effect of bringing the object described

vividly and distinctly before the mental eye. Werner's Nomenclature of Colours, although a work very little known or used, I have found very useful for fixing in my own mind certain general rules, so as to insure consistency in my descriptions of birds and other natural objects."

References to Diagram.

1, forehead (*frons*); 2, crown (*vertex*); 3, hind-head (*occiput*); 4, nape (*nucha*); 5, lore, or loral space; 6, eye (coloured margin, *iris*); 7, ear-coverts; 8, hind-neck (*cervix*); 9, side of neck; 10, back (*dorsum*); 11, rump (*uropygium*); 12, upper tail-coverts; 13, tail-feathers (*rectrices*); 14, primaries, and 15, secondaries (*remiges*); 16, larger wing-coverts; 17, lesser wing-coverts (including "median"); 18, carpal flexure, or bend of wing; 19, scapulars; 20, chin (*mentum*); 21, throat (*gula*); 22, fore-neck (*jugulum*); 23, breast (*pectus*); 24, abdomen; 25, vent; 26, under tail-coverts; 27, tibial plumes; 28, cere; 29, ridge of upper mandible (*culmen*); 30, lower mandible; 31, tarsus; 32, middle toe and claw; 33, pallux, or hind toe and claw.

W. L. BULLER.

ANALYTICAL KEY TO THE FAMILIES.

[Adapted to the New Zealand Genera]

This Key is intended to help beginners in naming a bird, by directing them to the family to which it belongs. To use it, begin at 1 on the left hand, and then follow to the number indicated on the descriptive line that answers to the specimen under examination.

1	Toes united by a membrane		18
	Toes margined with a broad membrane	Colymbidæ,	p. 73
	Toes free, without a membrane		2
2	Toes, three before and one behind		3
	Toes, two before and two behind		21
	Toes, three before and none behind	Charadiadæ,*	p. 47
3	Hind toe on the same level as the others		4
	Hind toe elevated above the others		15
4	Bill hooked; claws very sharp		5
	Bill straight or curved; claws moderate or blunt		6
5	Legs naked	Falconidæ,	p. 1
	Legs feathered	Strigidæ,	p. 4
6	Legs very short		7
	Legs moderate or long		8
7	Bill short and weak	Hirundinidæ,	p. 6
	Bill long and strong	Alcedinidæ,	p. 7
8	Bill strong and conical		9
	Bill soft, swollen at the base	Columbidæ,	p. 41
	Bill weak or curved		12
9	Bill, long, straight		10
	Bill, short, very strong		11
10	Legs and neck very long	Ardeidæ,	p. 52
	Legs and neck moderate	Sturnidæ,	p. 29
11	Nostrils exposed	Laniidæ,	p. 27
	Nostrils covered by projecting feathers	Corvidæ,	p. 27
	Nostrils covered by a scale	Turdidæ,	p. 24
12	Tongue with a brush or fringe at the tip		13
	Tongue smooth at the tip		14

* "Strepsilas" has a hind toe; "Himantopus" has none.

13	Tongue extensile	...	Meliphagidæ, p. 8
	Tongue not extensile	...	Upupidæ (Corvidæ) p. 30
14	Bill broad at the base, surrounded with bristles	...	Muscicapidæ, p. 26
	Bill slender, nostrils exposed	...	Luscinidæ, p. 17
	Bill slender, nostrils covered by a scale	...	Certhiadæ, p. 11
15	Bill long	...	... 16
	Bill short	...	Tetraonidæ, p. 43
16	Wings long and pointed	...	Scolopacidæ,* p. 55
	Wings short and rounded	...	Rallidæ, p. 59
	Wings obsolete	...	Apterygimæ, p. 44
17	Three front toes connected; hind toe free, or none	...	... 18
	All four toes connected	...	Pelecanidæ, p. 91
18	Wings long and pointed	...	... 19
	Wing-feathers rudimentary	...	Ptilopteri, p. 99
19	Bill broad and flat	...	Anatidæ, p. 67
	Bill as high as broad	...	... 20
20	Nostrils exposed	...	Laridæ, p. 75
	Nostrils in tubes	...	Procellaridæ, p. 82
21	Bill hooked; base with a cere	...	Psittacidæ, p. 33
	Bill slightly curved	...	Cuculidæ, p. 39

* "Strepsilas" has a hind toe; "Himantopus" has none.

THE QUAIL-HAWK.
(*Adult and Young.*)
HIERACIDEA NOVÆ-ZEALANDIÆ

PL. I. p. 1.

NEW ZEALAND BIRDS.

ORDER I. ACCIPITRES: BIRDS OF PREY.

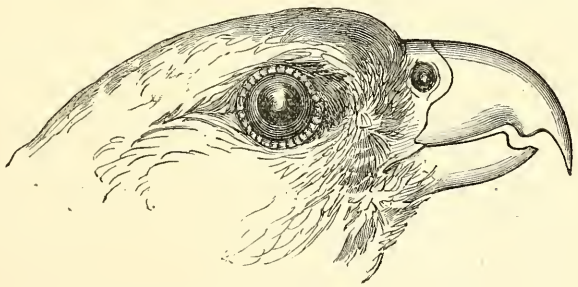
Bill hooked; feet strong, three toes in front and one behind, all armed with strong sharp claws, which are more or less retractile.

FALCONIDÆ. HAWKS.

Bill partly covered by a cere; wings long and pointed; legs naked.

HIERACIDEA. *Gould.*

Upper mandible with a sharp tooth; third quill the longest.
Australia, New Zealand, and Auckland Islands.



1. Hieracidea novæ-zealandiæ. *Lath.*

QUAIL-HAWK. SPARROW-HAWK. KAIAIA.

(Plate I.)

Above, brownish-black; below, rufous-brown spotted with rufous-white; chin and throat white, streaked with dark brown; thighs, rufous, streaked with brown. When very old, the upper parts are banded with rufous, and the breast is rufous with brown streaks.

Male.—L., 19; W., 11·25; B., 1·2; T., 2·5.

Female.—L., 19·5; W., 11·5; T., 2·75.

Egg.—Oval; yellowish-white, mottled all over with rich reddish-brown; length 2, and breadth 1·5 in.

Hab.—Both Islands, and the Auckland Islands.

"The food of the Quail-Hawk consists of birds, rats, mice, lizards, and the larger kinds of insects. It often takes its prey on the wing, swooping down on its terrified quarry with the rapidity of an arrow. It never feeds on carrion or offal."—BULLER.*

* "A History of the Birds of New Zealand." Quarto, 1873. London.

"The eggs very closely resemble those of *Falco peregrinus* of Europe in colour, size, and shape; are usually three in number; and are deposited on any decayed vegetable matter that wind or rain may have collected on the rocky ledge; for the efforts of this bird in the way of nest-building are of the feeblest description."—Potts.

Opinions are divided as to the admissibility of two species. Professor Hutton recognizes only one, which is "very variable in size." Mr. R. B. Sharpe, in his "Accipitres of the British Museum," makes one a sub-species of the other. The author of "The Birds of New Zealand" says,—

"Having brought with me to England good examples of both forms, for more critical examination, and having compared them with the fine series of specimens in the British Museum (about twenty in number) and with Forster's original drawings, I have come to the conclusion that there are in reality two distinct species, closely resembling each other in plumage in both the young and adult states, but differing appreciably in size."—*l.c.*, *p.* 4.

2. Hieracidea ferox. *Peale.*

Bush-Hawk. Karewarewa.

This species resembles *Hieracidea novæ-zealandiæ*, but is decidedly smaller, and has more slender legs and claws.

Male.—L., 16; W., 9; B., ·85; T., 2·25.
Female.—L., 17; W., 11; T., 2·5.
Hab.—With the preceding.

"Although not so numerous as it formerly was, the Bush-Hawk is more frequently met with than its congener. The high wooded lands of the interior appear to constitute its favourite haunts; and on the southern mountain-ranges of the North Island, as well as in the subalpine woods of the Canterbury Province, I have found it comparatively abundant. It is a spirited little hunter, and subsists by the chase, its food consisting principally of mice and small birds. During the breeding-season it is more than usually bold and fearless, assailing with fury all intruders upon its nest or young. . . . .

"The Bush-Hawk is generally met with on the outskirts of the woods or among the dead timber of native 'wairengas,' these localities being favourable for mice, on which it largely subsists. I once observed a young male of this species playing in the air with mice, after the manner of a cat; and the sight was as pretty as it was novel. When I first observed the bird he was perched on the naked limb of a tree, apparently engaged in examining his quarry. Then mounting in the air with a mouse in each of his talons, and expanding his wings and tail to their full extent, he dropped first one mouse and then the other, and instantly darted after them,

THE HARRIER.
(Adult and Young.)
CIRCUS GOULDI.

PL. IX. p. 3.

catching them in his talons before they reached the ground, then mounting high in the air again to renew the feat. Ultimately losing one of the mice, he discontinued his play, and, returning to the tree, killed and devoured the remaining one. . . . .

"The ordinary flight of this Hawk is direct and rapid; but it may sometimes be seen soaring high in the air, with the wings almost motionless and the tail spread into a broad fan. On the wing it often utters a prolonged petulant scream. This is the signal for a general outcry among the small birds within hearing; and the Tui and Korimako will often rise in large flights and follow him into the air. But the little Hawk, heeding not their menaces, pursues his course, and the excitement among the feathered fraternity gradually subsides till all is quiet again. The appearance of an Owl in the daytime produces a similar commotion among the small birds of the forest; and I have often been guided to the hiding-place of the unfortunate 'Morepork' by the clamour of the persecuting mob."
—Buller.

3. Circus gouldi. *Bonap.*

Harrier. Kahu.

Above, brown, varied with rufous; over the tail, white with a rufous bar near the tip of each feather; tail, silver-grey with brown bars; under-parts, rufous-white, with reddish-brown stripes on the breast. Cere, bluish; irides, yellow.

Young.—Dark brown above, varied with white on the back of the neck; below reddish-brown; thighs, rufous; cere, yellow; irides, hazel.

An albino variety from Riwaka is in the Nelson Museum.

Male.—L., 21; W., 16; B., 1·2; T., 3·4.

Female.—L., 23; W., 17; B., 1·3; T., 3·7.

Egg.—Oval; white; length 1·9, and breadth 1·5 inch.

Hab.—Both Islands; Chatham Islands, Australia, Tasmania, Fiji, Celebes.

"The present species is spread over a wide geographical area; for not only is it found in all parts of our own country, but it also occurs in Australia and Tasmania, extending to the eastward to the Fiji Islands, and ranging northwards into the Malay archipelago as far as Celebes.

"It is a very common bird in New Zealand, being met with on the fern-covered hills, in the plains, among the marshes of the low country, and even along the open sea-beach, where it feeds on carrion. It is seldom, however, found in the dense bush, although I once surprised one there in the act of picking a large Wood-Pigeon.

"Like all the other members of the genus, it hunts on the wing, performing wide circles at a low elevation from the ground, and sailing over meadows, fern-land, or marshes in quest of lizards, mice, and other small game. Its flight is slow, but vigorous and well sustained. The small size and specific gravity of its body, as compared with the great development of wings and tail and corresponding

muscles, enable it to continue these wanderings for a whole day without any apparent fatigue. When sailing, as it often does, at a high elevation, the wings are inclined upwards so as to form a broad obtuse angle (with the tail half-spread), and there is no perceptible motion in them, except when the bird alters its course. It is worthy of remark that the birds of the first year are apparently incapable of the peculiar sailing flight which I have described, their locomotion being effected entirely by slowly-repeated flappings of the wings. This circumstance, taken in conjunction with the dark colour of the young bird (appearing perfectly black at a little distance), has led to the common belief that there are two distinct species.

"When gorged with food, the Harrier takes up its station on a rising knoll, a projecting stump, or the naked limb of a detached tree standing in the open, when it assumes an erect posture, with the head drawn closely in and the wings folded, and remains perfectly motionless for a considerable time. When thus reposing, it is possible to get within gun-range of a 'Kahu-korako,' or very old bird; but at other times it is extremely difficult to obtain a shot. Hawks are known to be long-lived; and they appear to gain more experience of the world as they grow older. The dark-plumaged Harrier falls an easy prey to the gunner; it may be winged as it sails above him at an easy elevation, or it may be approached quickly and surprised when it descends to the ground to capture and devour a mouse or lizard. But the wary old 'White Hawk' carries with him the experience of many dangers, and is not so easily taken. I have followed one for the greater part of a day before I have succeeded in shooting it. These old birds, notwithstanding the extreme abundance of the species, are comparatively rare, and they are called Kahu-korako by the Natives, in allusion to their hoary plumage. Birds in ordinary adult plumage are also somewhat shy; but on horseback I have often approached near enough to detect the colour of the cere and legs.

"Besides devouring carrion of all kinds, the Harrier subsists on rats, mice, lizards, feeble or wounded birds, and even grubs and spiders."—Buller.

STRIGIDÆ. Owls.

Base of the bill concealed by bristles; eyes surrounded by a disc of long feathers; plumage, soft; wings, rounded; legs, feathered to the toes.

Athene. *Boie.*

Facial disc imperfect above the eyes; third and fourth quills the longest; tarsi longer than the middle toe and claw.

The warmer parts of both hemispheres.

THE MOREPORK OWL.
ATHENE NOVÆ-ZEALANDIÆ.

THE LAUGHING-OWL.
ATHENE ALBIFACIES.

4. Athene albifacies. *Gray.*

LAUGHING-OWL. LAUGHING-JACKASS. WHEKAU.

(Plate II.)

Brown, spotted with fulvous on the breast, and streaked with the same colour on the back; tail, barred with fulvous; feathers on the legs, pale rufous-white; sometimes the greater part of the facial disc is white.

L., 16; W., 11; B., 1·4; T., 3.

Hab.—South Island, and Kaimanawa Range in the North Island.

"This bird was originally described by Mr. G. R. Gray, in the 'Voyage of the "Erebus" and Terror,"' under the name of *Athene albifacies;* and Dr. Kaup afterwards made it the type of the genus *Sceloglaux,* of which it still remains the sole representative. . . . . The *Kiore maori,* which has been exterminated and replaced by the introduced Norway Rat (*Mus decumanus*), formerly abounded to such an extent in the wooded parts of the country that it constituted the principal animal food of the Maori tribes of that period. It was a ground-feeder, subsisting almost entirely on the fallen mast of the tawa, hinau, towai, and other forest trees; and it would therefore fall an easy prey to the *Sceloglaux*. The fact that the extinction of the native Rat has been followed by the almost total disappearance of this singular bird, appears to warrant the conclusion that the one constituted the principal support of the other. Be that as it may, the Laughing-Owl, as it has been termed, in allusion to its cry, is at the present day one of our rarest species."—BULLER.

5. Athene novæ-zealandiæ. *Gml.*

MOREPORK. RURU.

(Plate II.)

Above, brown, spotted with fulvous; below, rufous streaked with brown, and spotted with white on the abdomen; feathers on the legs, rufous.

L., 12; W., 8; B., ·9; T., 1·3.

Hab.—Both Islands; also Chatham Islands.

"Every New Zealand colonist is familiar with this little Owl, under the name of 'Morepork.' It is strictly a nocturnal species, retiring by day to the dark recesses of the forest, or hiding in the crevices of the rocks, and coming abroad soon after dusk to hunt for rats, mice, and the various kinds of moths and beetles that fly by night. It is common in all parts of the country, although not so numerous now as it formerly was; and the familiar cry from which it derives its popular name may often be heard in the more retired parts of our principal towns, as well as in the farmer's country home or in the rustic Maori 'kainga': I have even known several instances of its voluntarily taking up its abode in a settler's house, or, more frequently, in the barn, and remaining there a considerable time.

"When discovered in its hiding-place during the day, it is found sitting upright, with the head drawn in, the eyes half closed, and the feathers of the body raised, making the bird appear much larger than it really is. It will then allow a person to approach within a few yards of it, and, if disturbed, will fly off noiselessly for a short distance and attempt to secrete itself. It will often remain many days, or even weeks, in the same piece of bush. In the volcanic hills or extinct craters that surround the city of Auckland there are numerous small caves, formed by large cracks or fissures in the ancient lava-streams, the entrance to them being generally indicated by a clump of stunted trees, growing up among loose blocks of scoria. These gloomy recesses are a favourite resort of the Morepork in the daytime.

"On the approach of night its whole nature is changed: the half-closed orbits open to their full extent, the pupils expand till the yellow irides are reduced to a narrow external margin, and the lustrous orbs glow with animation, while all the movements of the bird are full of life and activity. It then sallies forth from its hiding-place and explores in all localities, preferring, however, the outskirts of the forest, where nocturnal insects abound, and the bush-clearings in the neighbourhood of farms, or the ruins of Maori villages, these places being generally infested with rats and mice, on which it chiefly subsists. Like other birds of prey, it afterwards regurgitates the hair and other indigestible parts of these animals in hard pellets. That the Morepork also preys on small birds there can be no reasonable doubt, although it has been frequently denied."—Buller.

ORDER II. PASSERES: PERCHING BIRDS.

Bill, straight or curved; legs, moderate; toes, three before and one behind; claws, curved, moderate.

HIRUNDINIDÆ. Swallows.

Bill, short, very wide at the gape; wings, long and narrow; tail, forked; feet, weak.

Hirundo. *L.*

Bill, flattened; first quill the longest; tarsi, naked, shorter than the middle toe.
Spread over the whole world.

6. Hirundo nigricans. *Vieill.*

Head and back, blue-black; wings and tail, dark brown; forehead, ferruginous; below and over the tail, rufous-white.
L., 5·5; W., 4·5; B., ·42; T., ·42; Tail, 2.
Hab.—Australia and Tasmania. An occasional visitant.

"The Tree-Swallow, which is a native of Australia, is admitted into our list of birds on the authority of a specimen shot by Mr. Lea at Taupata, near Cape Farewell, on the 14th of March, 1856, and fortunately preserved in the Otago Museum. Mr. Gould informs us that in its own country it is a migratory species, visiting the southern portions of Australia and Tasmania, arriving in August and retiring northwards as summer advances. In the summer of 1851, Mr. F. Jollie observed a flight of swallows at Wakapuaka, in the vicinity of Nelson, and succeeded in shooting one, thus placing the matter beyond all question. There can be no doubt that these occasional visitants are stragglers from the Australian continent, and that to reach our country they perform a pilgrimage on the wing of upwards of a thousand miles!"—BULLER.

NOTE.—See further evidence in Trans. N.Z. Inst., vol. xi., p. 360.

CORACIADÆ. ROLLERS.

Bill, more or less lengthened, broad at the base, sides compressed, tip hooked; nostrils, basal, lateral, with linear opening; wings, long and pointed; tail, short and even; tarsi, short; toes, moderate.

EURYSTOMUS. *Vieill.*

Bill, strong, depressed and broad at the base, sides much compressed towards the tip, which is hooked; nostrils, basal, oblique, partly covered by a plumed membrane; second quill the longest; tail, moderate and even; tarsi, shorter than middle toe, and covered with transverse scales; toes, long, united at the base; hind toe, long; claws, moderate, curved, and acute.

7. Eurystomus pacificus. *Lath.*

AUSTRALIAN ROLLER. DOLLAR-BIRD.

Head and neck, brown, passing into sea-green on the upper surface, and deepening into black on the lores; spurious wing, outer webs of basal half of quills, outer webs of secondaries, and basal half of outer webs of tail-feathers vivid blue; six of the primaries with a greenish-white basal band, forming a conspicuous spot in the centre of each wing; throat, vivid blue, with a stripe of lighter blue down the centre of each feather; under-part of shoulder and abdomen, light-green; under-surface of the primaries and the lateral tail-feathers, deep blue; irides, brown; bill and feet, red; inside of mouth, yellow.

L., 11; W., 10·5; B., 1; T., ·7.

NOTE.—This species is included on the authority of a communication from Mr. F. E. Clarke to the Westland Institute on the 18th February, 1881, describing it under the name of *Hirundolanius cœruleus.*

ALCEDINIDÆ. KINGFISHERS.

Bill, long, straight, and broad at the base; wings and tail, rounded; feet, weak.

HALCYON. *Swains.*

First quill, long; second the longest; outer toe united to the third joint, and the inner to the second joint, of the middle toe.

Asia, Africa, Australia, and Polynesia.

8. Halcyon vagans. *Lesson.*

KINGFISHER. KOTARE.

(Plate III.)

Top of head and upper part of back, dark green; lower back, bright greenish-blue; wings and tail, dark blue; under-parts, and a broad collar round the neck, buffy white.

Young.—Above, dark brown, with a few white feathers on the back of the neck; wing-coverts tipped with buff, and some of the breast feathers slightly margined with brown.

L., 9·7; W., 4; B., 2·25; T., ·6.

Egg.—Oval; white; length, 1·15; breadth, ·9.

Hab.—Both Islands, and Chatham Islands.

"It is very generally dispersed, being met with in all suitable localities. It frequents alike the sea-shore, the open country, forest-clearings, and the banks of fresh-water streams. It is, moreover, one of those birds that seem instinctively to resort to the habitations of man; and instead of, like many other indigenous species, decreasing, it thrives and multiplies under the altered physical conditions resulting from the colonization of the country. It seeks out the new home of the settler, and becomes the familiar 'companion of his solitude.' During the winter months, especially, it resorts to cultivated grounds in quest of grubs and worms, which at this season constitute its principal food. In the early morn it may be seen perched on the fences, gateways, and outbuildings of the farmyard, sitting upright with contracted neck, looking stiff and rigid in the cold frosty air; and as the day advances it enlivens the landscape by its darting flight, while it attracts notice by its shrill, quickly-repeated call, which is not unlike the note of the European Kestrel. In the pairing-season this species becomes very noisy and lively, the mated birds chasing each other in amorous play from tree to tree or from post to post with loud unmusical cries, something like the syllables *cree-cree-cree* uttered in quick succession. They breed late in the year; the brood numbers five or six; and for several weeks after quitting the nest the young family keep together. This will probably account for the abundance of Kingfishers in the autumn months, which has been regarded by some as indicating a seasonal migration."
—BULLER.

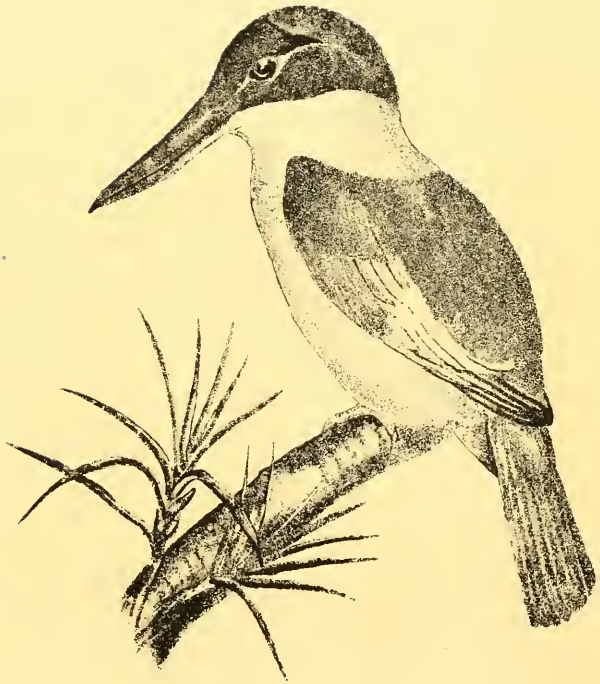
MELIPHAGIDÆ. HONEY-EATERS.

Bill, rather long, and curved; nostrils covered by a membranous scale; tongue, extensile, furnished at the tip with a bunch of filaments; tarsi, rather short; hind toe, long.

POGONORNIS. *Gray.*

Fourth and fifth quills equal, and longest; second, similar in shape to third; tail, emarginate.

New Zealand only.



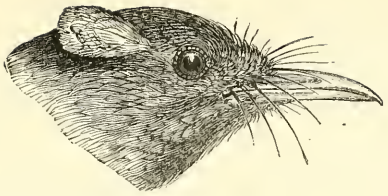
THE KINGFISHER.
HALCYON VAGANS.

PL. III. *p.* 8.

THE STITCH-BIRD.
(Male and Female.)

POGONORNIS CINCTA.

PL. V. p. 9.



9. Pogonornis cincta. *Dubus.*

STITCH-BIRD. HIHI. MATAKIORE.

(Plate V.)

Head and neck black, with a tuft of white feathers behind each ear; breast, and some of the wing-coverts, bright yellow; a white band on the wings; abdomen, brownish-white.

Female.—Brown, with a white band on the wings.

L., 7; W., 4; B., ·75; T., 1·2.

Egg.—Ovoid; yellow-white, thickly spotted all over with rufous; length, ·75; breadth, ·6.

Hab.—North Island only.

"This handsome species has only a limited range. It is comparatively common in the southern parts of the North Island, and may be met with as far north as the wooded ranges between Waikato Heads and Raglan, beyond which it is extremely rare. It is never found in the country north of Auckland, with the exception of one locality, the Barrier Islands, where Captain Hutton records it 'not uncommon' in December, 1868. I have never heard of its occurrence anywhere in the South Island. It affects deep wooded gullies, and is seldom found on the summits of the ranges. In the dense timber covering old river-bottoms or low-lying flats it may be sought for; but it rarely frequents the light open bush or the outskirts of the forest. It is, moreover, a very shy bird, and, being most active in all its movements, it is not easily shot. Its food consists of insects, the honey of various bush-flowers, and the smaller kinds of berries. It often frequents the topmost branches of the high timber, where it may be seen flitting about in search of insects. If disturbed by the report of a gun, it will fly off to a neighbouring tree with a light and graceful movement of the wings; but, when descending to a lower station, it adopts a different manner of flight, elevating the tail almost to a right angle with the body, and scarcely moving the wings at all.

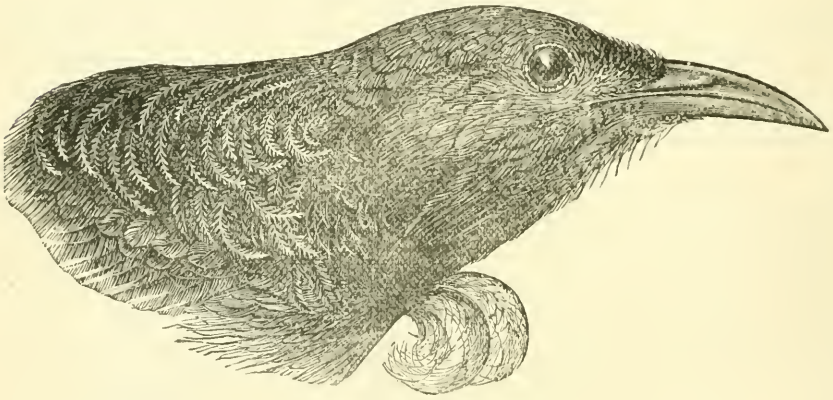
"The male bird erects the tail and spreads the ear-tufts when excited or alarmed; but the female habitually carries the tail perfectly erect. The sexes vary so much in appearance that many of the natives regard them as distinct species, and call them by different names. The male bird utters at short intervals and with startling energy a melodious whistling call of three notes. At other times he

produces a sharp clicking sound like the striking of two quartz stones together: the sound has a fanciful resemblance to the word 'stitch,' whence the popular name of the bird is derived. The female also utters this note, but not the former one; and, being recluse in her habits as well as silent, she is seldom seen."—Buller.

Prosthemadera. *Vig. and Horsf.*

Fifth and sixth quills nearly equal, and longest; the third, fourth, fifth, and sixth, notched in the middle of the inner web; tail, long, rounded.

New Zealand and the Auckland Islands.



10. Prosthemadera novæ-zealandiæ. *Gml.*

Parson-bird. Tui.

(Plate VI.)

Bluish or greenish black, with metallic reflections; the hind neck ornamented with a collar of soft filamentous plumes, curving outwards, and with a white line down the centre; white spot on each wing; throat ornamented with two tufts of white curly feathers.

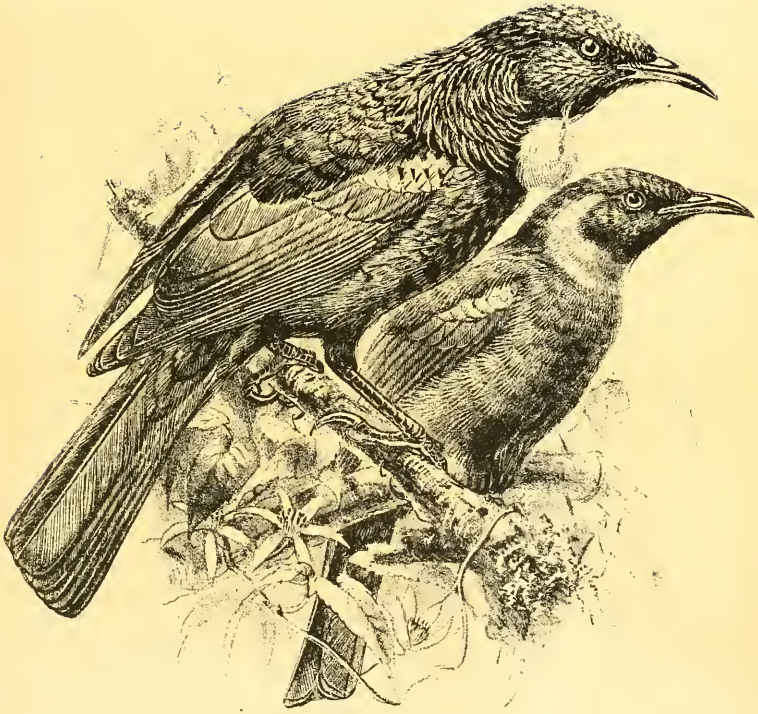
Albino varieties occasionally occur.

L., 12·5; W., 6·3; B., 1·3; T., 1·4.

Egg.—Ovoid, often elongated; white, or pale pink, spotted with rufous-brown, principally towards the larger end; length, 1·2 to 1·45; breadth, ·8.

Hab.—Both Islands and the Chatham Islands.

"Owing to its excellent powers of mimicry, and the facility of rearing it in confinement, it is a favourite cage-bird, both with the natives and the colonists. Although of very delicate constitution, it has been known to live in confinement for upwards of ten years. More frequently, however, it becomes subject, after the first year, to convulsive fits, under which it ultimately succumbs. Cleanliness, a well-regulated diet, and protection from extremes of temperature are the proper safeguards. I had as many as ten of them caged at one time; but they died off one by one, and invariably in the manner indicated. Naturally of a sprightly disposition, it is cheerful and



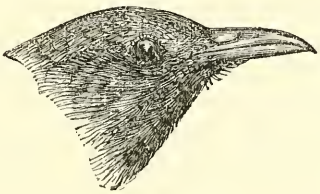
THE PARSON-BIRD OR TUI.
(*Adult and Young.*)
PROSTHEMADERA NOVÆ-ZEALANDIÆ.

PL. VI. p. 10.

playful in captivity, incessantly flitting about in its cage and mimicking every sound within hearing. It will learn to articulate sentences of several words with clearness, and to imitate the barking of a dog to perfection. One, which I had kept caged in the same room with a Parrakeet (*Platycercus auriceps*), acquired the rapid chattering note of that species; and another, in the possession of a friend, could whistle several bars of a familiar tune in excellent time. The Maoris fully appreciate the mocking powers of this bird, and often devote much time and patience to its instruction."—Buller.

Anthornis. *Swainson.*

First quill, short and pointed; second, deeply notched near the tip in the adult, acutely pointed in the young; fifth the longest; tail, emarginate.
New Zealand and the Chatham Islands.



11. Anthornis melanura. *Sparrm.*

Bell-bird. Mocker. Korimako. Makomako.

Yellowish-olivaceous; head tinged with steel-black; wings and tail brownish-black.
Female.—Brownish-olivaceous; wings and tail, brown; a white line from the bill towards the side of the neck.
The head is sometimes stained rufous by the juices of plants.
Male.—L., 7·5; W., 3·75; B., ·9; T., ·9.
Female.—L., 6·4; W., 3·25; B., ·7; T., ·8.
Egg.—Ovoid; white, with reddish specks, sometimes pinkish; length, ·9; breadth, ·7.
Hab.—Both Islands, and Auckland Islands.

"This species, formerly very plentiful in every part of the country, appears to be rapidly dying out. From some districts, where a few years ago it was the commonest bird, it has now entirely vanished. In the Waikato it is comparatively scarce, on the East Coast it is only rarely met with, and from the woods north of Auckland it has disappeared altogether. In my journeys through the Kaipara District, eighteen years ago, I found this bird excessively abundant everywhere; and on the banks of the Wairoa the bush fairly swarmed with them. Dr. Hector, who passed over the same ground in 1866, assures me that he scarcely ever met with it. . . . .

"It is called the Bell-bird from the fanciful resemblance of one of its notes to the distant tolling of a bell. Its ordinary song is not unlike that of the Tui or Parson-bird, but is more mellifluous. Its

notes, though simple, are varied and sweetly chimed; and, as the bird is of social habits, the morning anthem, in which scores of these sylvan choristers perform together, is a concert of eccentric parts, producing a wild but pleasing melody. I have occasionally heard a solitary Bell-bird pouring forth its liquid notes after the darkness of advancing night had silenced all the other denizens of the grove. It ought to be mentioned, moreover, that both sexes sing. When alarmed or excited they utter a strain of notes which I can only compare to the sound produced by a policeman's rattle quickly revolved. This cry, or the bird-catcher's imitation of it, never fails to attract to the spot all the Bell-birds within hearing. The Maoris are accustomed to snare them by means of a *tuki* baited with the crimson flowers of the *Metrosideros*. The bird alights on the treacherous perch to sip the flowers, and a sudden jerk on a running noose secures it firmly by the leg.

"In former times, when this species was abundant throughout the whole country, certain forest-ranges were famed as Korimako preserves, and were highly prized on that account by the natives owning them. At the present day, in the investigation of native titles to land, the 'snaring of Korimakos' by their ancestors is an act of ownership frequently pleaded in support of the tribal claim."—Buller.

12. Anthornis melanocephala. *Gray.*

(Plate VII.)

Yellowish-olive; head, steel-black; neck, breast, and upper tail-coverts tinged with black.

L., 11·25; W., 4·25; B., 1·1; T., 1·5.

Hab.—Chatham Islands only.

"This species, which is a native of the Chatham Islands, is very similar to the well-known *Anthornis melanura*; but, as will be seen on referring to the measurement given above, it is considerably larger. It differs, moreover, in having the whole of the head and neck brightly glossed with purplish or steel-blue."—Buller.

Zosterops. *Vig. and Horsf.*

Bill, slightly curved; third quill longest, first longer than fourth; tail, emarginate; eyes surrounded by a circle of white feathers.

India, Africa, Australia, Fiji.

13. Zosterops lateralis. *Lath.*

White-eye. Wax-eye. Blight-bird. Tauhou.

Head, and over the tail, bright olive; back, dark grey; throat, yellow; abdomen, white; flanks, rufous. The female is rather smaller than the male, and, in the young, the chin is light grey, and the white circle round the eye is obscure or absent.

L., 5; W., 2·3; B., ·5; T., ·6.

Egg.—Ovoid; blue; length, ·7; breadth, ·5.

Hab.—Both Islands; Chatham Islands, Australia, and Tasmania.

THE CHATHAM ISLAND BELL-BIRD.
ANTHORNIS MELANOCEPHALA.

PL. VII. *p.* 12.

"The history of this bird from a North-Island point of view is very interesting and suggestive. It appeared on the north side of Cook Strait, for the first time within the memory of the oldest native inhabitants, in the winter of 1856. In the early part of June of that year I first heard of its occurrence at Waikanae, a native settlement on the West Coast, about forty miles from Wellington. The native mailman brought in word that a new bird had been seen, and that it was a visitor from some other land. A week later he brought intelligence that large flocks had appeared, and that the 'tauhou' (stranger) swarmed in the brushwood near the coast; reporting further that they seemed weary after their journey, and that the natives had caught many of them alive. Simultaneously with this intelligence I observed a pair of them in a garden hedge in Wellington, and a fortnight later they appeared in large numbers, frequenting the gardens and shrubberies both in and around the town. They were to be seen daily in considerable flocks, hurrying forwards from tree to tree, and from one garden to another, with a continuous, noisy twitter. In the early morning a flock of them might be seen clustering together on the topmost twigs of a leafless willow, uttering short plaintive notes, and, if disturbed, suddenly rising in the air and wheeling off with a confused and rapid twittering. When the flock had dispersed in the shrubbery, I always observed that two or more birds remained as sentinels or call-birds, stationed on the highest twigs, and that on the slightest alarm the sharp signal-note of these watchers would instantly bring the whole fraternity together. The number of individuals in a flock, at that time, never exceeded forty or fifty; but of late years the number has sensibly increased, it being a common thing now to see a hundred or more consorting together at one time. They appeared to be uneasy during, or immediately preceding, a shower of rain, becoming more noisy and more restless in their movements. They proclaimed themselves a blessing by preying on and arresting the progress of that noxious aphis known as 'American blight' (*Schizoneura lanigera*). They remained with us for three months, and then departed as suddenly as they had come. They left before the orchard-fruits, of which they are also fond, had ripened; and, having proved themselves real benefactors, they earned the gratitude of the settlers, while all the local newspapers sounded their well-deserved praises.

"During the two years that followed the *Zosterops* was never heard of again in any part of the North Island; but in the winter of 1858 it again crossed the strait, and appeared in Wellington and its environs in greater numbers than before. During the four succeeding years it regularly wintered with us, recrossing the strait on the

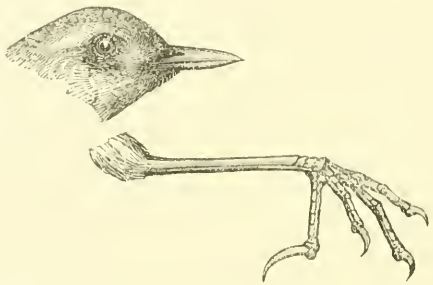
approach of spring. Since the year 1862, when it commenced to breed with us, it has been a permanent resident in the North Island, and from that time it continued to advance northwards."—Buller.

CERTHIADÆ. Creepers.

Bill, slender, tip entire; nostrils, small, partly covered by a membranous scale; hind toe, long.

Xenicus. *Gray.*

Bill, moderate; third, fourth, and fifth quills nearly equal, and longest; second, rather shorter than seventh; legs and feet, moderate or strong; tail, very short.
New Zealand only.



14. Xenicus longipes. *Gml.*

Bush Wren.

(Plate VIII.)

Above, green with a brown forehead; throat, white; abdomen, grey; flanks, yellow; some of the wing-coverts brownish-black; a white spot beneath, and a white line over the eye, extending towards the back of the head, where it becomes yellow.
L., 4; W., 2; B., ·62; T., ·9.
Hab.—Both Islands.

"It is generally met with singly or in pairs, but sometimes several are associated, attracting notice by the sprightliness of their movements. They run along the boles and branches of the trees with restless activity, peering into every crevice and searching the bark for the small insects and larvæ on which they feed. It is strictly arboreal in its habits, never being seen on the ground, in which respect it differs conspicuously from the closely allied species, *Xenicus gilvirentris*. It has a weak but lively note, and its powers of flight are very limited.

"On comparing my specimens of this bird with the type of Mr. G. R. Gray's *Xenicus stokesii* in the British Museum, I feel satisfied that they are referable to one and the same species, the difference of plumage being only sexual."—Buller.

THE BUSH WREN.
(*Male and Female.*)

XENICUS LONGIPES.

THE ROCK WREN.
(*Male and Female.*)

XENICUS GILVIVENTRIS.

PL. VIII. *pp.* 14, 15.

15. Xenicus gilviventris. *Pelz.*

ROCK WREN.

(Plate VIII.)

Above, olive-green, with the head and neck brownish; below, fawn colour; flanks and vent tinted with yellow, some of the wing-coverts brownish-black; a few white feathers under the eye, and a white line above it extending towards the back of the head.

In the female the upper part of the back is brown.

L., 3·5; W., 2; B., ·65; T., ·9.

Hab.—South Island.

"It lives exclusively amongst the large taluses of *débris* high on the mountain-sides. Instead of flying away when frightened, or when stones are thrown at it, or even when shot at, it hides itself among the angular *débris* of which these large taluses are composed. We tried several times in vain to catch one alive by surrounding it and removing these blocks. It reminded me strongly of the habits and movements of the lizards which live in the same regions and in similar localities."—HAAST.

"It is worthy of remark that in this species the claw of the hind-toe is considerably more developed than in the tree-frequenting *X. longipes*, even exceeding the toe in length—a modification of structure specially adapted to the peculiar habits of the bird."—BULLER.

ACANTHISITTA. *Lafr.*

Bill, long, slender, inclining slightly upwards; third, fourth, and fifth quills nearly equal and longest, second rather longer than seventh; tarsi, long, slender; tail, short.

New Zealand only.

16. Acanthisitta chloris. *Sparrm.*

RIFLEMAN. TITIPOUNAMU.

Above, green, tinged with brown on the forehead; wing-feathers, dark brown edged with green, yellowish at base; white line over the eye; below, white, tinged with yellow on the flanks; tail, black, with a yellowish-white tip.

Female.—Brownish-white, streaked with dark brown above and white below.

L., 3; W., 1·75; B., 6; T., ·75.

Egg.—Ovoid; white; length, ·6; breadth, ·5.

Hab.—Both Islands.

"The Rifleman is the smallest of our New Zealand birds; and, although comparatively common, very little is at present known of its natural history. It is very generally distributed over the middle and southern portions of the North Island, in all suitable localities, and throughout the whole extent of the South Island. It is to be met with generally on the sides and summits of the wooded ranges,

seldom or never in the low gullies. Captain Hutton found it on the Great Barrier, and was assured by the native residents of that island that it was a migratory bird, coming and going with the Cuckoo!

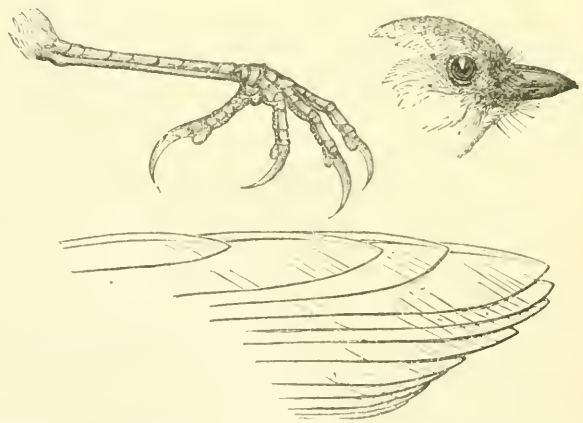
"In its habits it is lively and active, being incessantly on the move, uttering a low feeble *cheep* (like the cry of a young bird), accompanied by a constant quivering of the wings. It is generally to be seen running up the boles of the larger trees, often ascending spirally, prying into every chink and crevice, and moving about with such celerity that it is rather difficult for the collector to obtain a shot. Its powers of flight are very feeble, and it simply uses its wings for short passages from one tree to another. Its tail is extremely short, and is hardly visible when the bird is in motion.

"The stomachs of all that I have opened contained numerous remains of minute insects, sometimes mixed with finely-comminuted vegetable matter."—Buller.

Orthonyx. *Temm.*

Bill, short and strong for this family; fourth, fifth and sixth quills nearly equal, second much shorter than seventh; tail, long, much worn at the end; tarsi longer than the middle toe.

Australia.



17. Orthonyx albicilla. *Less.*

White-head. Popokatea.

(Plate IX.)

Head, breast, and abdomen, brownish-white; back and tail, brown; wing-feathers, dark brown.

L., 5·8; W., 2·8; B., ·6; T., 1.

Egg.—White, faintly speckled with pink; length, ·9; breadth, ·62.

Hab.—North Island only.

"It frequents all wooded localities, but seems to prefer the outskirts of the forest and the low bush fringing the banks of rivers and

THE WHITE-HEAD CANARY.
ORTHONYX ALBICILLA.

THE YELLOW-HEAD CANARY.
ORTHONYX OCHRCCEPHALA.

PL. IX. pp. 16, 17.

streams. It is gregarious in its nature; and the report of a gun, the cry of a Hawk, or any other exciting cause will instantly bring a flock of them together, producing a perfect din with their loud chirping notes. It is a curious or inquisitive bird, following the intruder as he passes through the bush, and watching all his movements in a very intelligent manner. If he remains stationary for a few moments, it will peer at him through the leaves with evident curiosity, and will hop gradually downwards from twig to twig, stretching out its neck and calling to its fellows in a loud chirp, and approaching the object of this scrutiny till almost within reach of his hand."—Buller.

18. Orthonyx ochrocephela. *Gml.*

Native Canary. Yellow-head. Popokatea.

(Plate IX.)

Head, breast, and abdomen, yellow; back, yellowish-brown; tail, yellowish-olivaceous; wing-feathers, brown, mostly edged with yellowish brown.

L., 6; W., 3·2; B., ·6; T., 1.

Egg.—White, with small faint specks of red; length, ·9; breadth, ·7.

Hab.—South Island only.

"This bright-coloured bird is the southern representative of *Orthonyx albicilla*. Its range is confined to the South Island, where it is quite as common as the preceding species is in the North. A narrow neck of sea completely divides their natural habitat,—a very curious and suggestive fact, inasmuch as this rule applies equally to several other representative species treated of in the present work.

"The habits of this bird are precisely similar to those of its northern ally; but it is superior to the latter in size and in the richer colour of its plumage, while its notes are louder, and its song more varied and musical. A flock of these Canary-like birds alarmed or excited, flitting about among the branches with much chirping clamour, and exhibiting the bright tints of their plumage, has a very pretty effect in the woods."—Buller.

LUSCINIDÆ. Warblers.

Bill, straight and slender; opening of nostrils exposed; tarsi, slender.

Sphenœacus. *Gray.*

Bill, moderate, arched above; wings, short, fourth and fifth quills equal and longest; tail-feathers, long and pointed, stiff, the barbs distant and unconnected. In the young the tail-feathers are of the ordinary form.

Australia.

19. Sphenœacus punctatus. *Quoy and Gaim.*

Fern-bird. Utick. Matata.

(Plate X.)

Above, yellow-brown, streaked with black; forehead, rufous, with a black streak in the middle of each feather; below, white spotted with black, tinged with fulvous on the flanks and abdomen; tail, brown; a brownish-white streak from the nostrils over each eye.

L., 6·75; W., 2·3; B., ·5; T., ·8.

Varies considerably in colour.

Egg.—Ovoid; white, speckled all over with violet and greyish red; length, ·8; breadth, ·6.

Hab.—Both Islands.

"This recluse little species is one of our commonest birds, but is oftener heard than seen. It frequents the dense fern *(Pteris aquilina)* of the open country, and the beds of the raupo *(Typha angustifolia)* and other tall vegetation that cover our swamps and low-lying flats. In these localities it may constantly be heard uttering, at regular intervals, its sharp melancholy call of two notes, *u-tick, u-tick*, and responsively when there are two or more. When the shades of evening are closing in, this call is emitted with greater frequency and energy, and in some dreary solitudes it is almost the only sound that breaks the oppressive stillness. In the Manawatu district of the Province of Wellington, where there are continuous raupo-swamps, covering an area of 50,000 acres or more, I have particularly remarked this; for, save the peevish cry of the Pukeko, occasionally heard, and the boom of the lonely Bittern, the only animate sound I could detect was the monotonous cry of this little bird calling to its fellows as it threaded its way among the tangled growth of reeds.

"Like the other members of the group to which it belongs, it is a lively creature, active in all its movements, and easily attracted by an imitation of its note; but, when alarmed, shy and wary. Its tail, which is long and composed of ten graduated feathers, with disunited filaments, appears to subserve some useful purpose in the daily economy of the bird; for it is often found very much denuded or worn. When the bird is flying the tail hangs downward. Its wings are very feebly developed, and its powers of flight so weak that, in open land where the fern is stunted, it may easily be run down and caught with the hand; but in the swamps it threads its way through the dense reed-beds with wonderful celerity, and eludes the most careful pursuit. When surprised or hard-pressed in its more exposed haunts, it takes wing, but never rises high, and, after a laboured flight of from fifteen to twenty yards in a direct line, drops under cover again. Its food consists of small insects and their larvæ, and the minute seeds of various grasses and other plants."—Buller.

20. Sphenœacus rufescens. *Buller.*

(Plate X.)

Above, wings and tail, rufous-brown; below, brownish-white; throat tinged with yellow; a brownish-white streak over the eye; sides of the head marked with black.

L., 7; W., 2·5; B., ·52; T., ·9.

Hab.—Chatham Islands only.

THE FERN-BIRD.

SPHENŒACUS PUNCTATUS.

SPHENŒACUS RUFESCENS.

PL. X. *pp.* 17, 18.

"This well-marked species is confined to the Chatham Islands, where it was first discovered, in 1868, by Mr. Charles Traill, a gentleman greatly devoted to conchology. He obtained it on a small rocky isle, lying off the coast of the main island, during an expedition there in pursuit of his favourite branch of science; but was unable to give me much information respecting its habits or economy, merely stating that he observed it flitting about among the grass and stunted vegetation, and succeeded in knocking it over with a stone."—Buller.

21. Sphenœacus fulvus. *Gray.*

Above, bright fulvous streaked with black; forehead, rufous: below, white minutely dotted with black; a white line from the nostrils over the eyes and enlarging beyond them on each side.

L., 7; W., 2·4; B., ·6; T., ·87.

Hab.—South Island.

"This species, which appears to be confined to the South Island, bears a general resemblance to *Sphenœacus punctatus;* but, on comparing them, the following characteristic differences are manifest: The present bird is larger and has the whole of the plumage lighter; the upper parts have the central marks much narrower, and on the hind neck and rump they are entirely absent; the white superciliary streak is less distinctly defined, the spots on the under surface are less conspicuous, and the tail-feathers, which are much paler than in *S. punctatus,* differ likewise in their structure, the webs being closely set, instead of having loose disunited barbs."—Buller.

Gerygone. *Gould.*

Bill, short and slender; first quill short, the fourth the longest; tail, long; tarsi, longer than middle toe.

Australia.

22. Gerygone flaviventris. *Gray.*

Grey Warbler. Riroriro.

Above, greyish-olive; throat and breast, grey; abdomen, white, tinged with yellow on the vent; tail, black, with a white spot near the tip of the lateral feathers.

L., 4·25; W., 2·25; B., ·5; T., ·75.

Egg.—Ovoid; pinkish-white, spotted with red, principally at the larger end, occasionally pure white; length, ·65; breadth, ·5.

Hab.—Both Islands.

"This little bird, of sombre plumage and unobtrusive habits, is an interesting species, whether we regard it merely as the familiar frequenter of our gardens and hedgerows, or, more especially, as the builder of a beautiful pensile nest and the foster-parent of our two parasitical Cuckoos (*Eudynamis taitensis* and *Chrysococcyx lucidus*). It belongs to a group of which there are numerous representatives in

Australia, and its habits are in no way different from those of its relations. Its food consists of minute flies and insects and their larvæ, in the eager pursuit of which it appears to spend every moment of its waking hours, moving about with great agility, and uttering at short intervals a trilling note of much sweetness, though of little variety. The bird is easily attracted by an imitation of this note, however rudely attempted, and may be induced to fly into the open hand by quickly revolving a leaf or small fern-frond, so as to represent the fluttering of a captive bird. Layard compares the note to the creaking sound of a wheelbarrow; and I have sometimes heard it so subdued and regular as to be scarcely distinguishable from the musical chirping of the pihireinga or native cricket.

"The Grey Warbler builds a large and remarkably ingenious nest, in which it lays from three to six eggs, and, as I am inclined think, breeds twice in the season. The form of the nest appears to be generally adapted to circumstances of locality, &c., and the accompanying woodcut will show how variable it is."—Buller.

23. Gerygone albofrontata. *Gray.*

Above, yellowish-brown; below, white, with a slight yellow tinge on the abdomen; a white streak over the eye; middle tail-feathers, brown, with a dark band near the tip; outer feathers, black, with a reddish-white band.

L., 6·3; W., 2·7; B., ·5; T., ·8.

Hab.—New Zealand? (Dieffenbach.) Mr. Henry Travers brought specimens from the Chatham Islands.

24. Gerygone sylvestris. *Potts.*

Above, dark olivaceous; wings, smoky-black, outer webs fringed with yellow; abdomen and under surface of wings, white; neck and breast, pale grey; tail, brown with a broad band of black, the two centre feathers black, the outer feathers broadly barred with white, and all tipped with brown.

L., 4·4; W., 2; B., ·5; T. ·75.

Certhiparus. *Lafr.*

Bill, moderate; nostrils lunate; fifth quill the longest; tail, long, rounded, slightly worn; tarsi, longer than middle toe.

New Zealand only.

25. Certhiparus novæ-zealandiæ. *Gml.*

Brown Creeper. Toitoi.

Head, back, and tail reddish-brown; sides of the head, and nape, dark grey; under surface, fawn; lateral feathers of the tail with a broad brown spot.

L., 5·3; W., 2·5; B., ·5; T., ·87.

Egg.—Ovoid; white, with grey and brown spots, which form a ring round the larger end; length, ·7; breadth, ·6.

Hab.—South Island only.

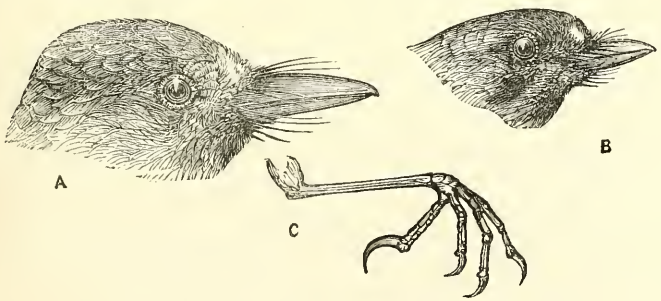
"Like the members of the allied group, *Orthonyx*, it is a gregarious species, associating together in small flocks, and hunting diligently for its insect food among the branches and dense foliage of the forest undergrowth. On being disturbed or alarmed they quickly assemble and chirp round the intruder for a few minutes; and on being reassured they disperse again in search of food."—Buller.

Petrœca. *Swains.*

Bill, rather short, broad at the base, and notched near the tip; first quill short, fifth the longest; tarsi, as long as, or longer than, the middle toe; bill surrounded with bristles.

Australia, Samoa Islands.

Note.—*Petrœca* is substituted for Swainson's *Petroica* as being classically more correct. Dr. Finsch proposes dividing this genus into two—viz., *Miro* and *Myiomoira*.



A. Petrœca (Miro) longipes. B, C. Petrœca (Myiomoira) toitoi.

26. Petrœca toitoi. *Less.*

Pied Tit. Miromiro.

Head, neck, and upper surface, jet-black, with a conspicuous white spot over the bill; breast and under-parts, pure white; wing-feathers, crossed near their base by an angular patch of white.

Female.—Above, smoky-brown, with a minute frontal spot of white; throat and all the under-parts, greyish-white; wing-feathers, blackish-brown, marked with fulvous white.

L., 4·5; W., 2·8; B., ·6; T., ·75.

Egg.—White, speckled with brownish grey; length, ·78; breadth, ·59.

Hab.—North Island.

"This elegant little bird belongs to the North Island, where it has a pretty general distribution, being met with in all localities suited to its habits. It is a familiar species, seeking the habitations of man, and taking up its abode in his gardens and orchards. It is always to be seen in the clearings and cultivated grounds near the bush, moving about in a peculiar fitful manner, and in the early morn may be heard uttering a prolonged trilling note, very sweet and plaintive. Its usual attitude is with the wings slightly lowered and the tail perfectly erect, almost at a right angle with the body. It has a sparkling black eye, and all its actions are lively and sprightly. The strongly-contrasted plumage of the male bird renders it a conspicuous object; but the female, owing to her sombre colours and less obtrusive colours, is rarely seen."—Buller.

27. Petrœca macrocephala. *Gml.*

Yellow-breasted Tit.

Head, neck, and back jet-black, with a white spot over the bill; below, yellow, very bright on the breast, and getting gradually paler as it approaches the vent; wings, brownish-black, some of the primaries with a spot, and the secondaries with a band, of white; tail, blackish-brown, the three outer feathers with a band of white.

Female.—Above, brown, with a small white spot over the bill; throat, brownish-white; abdomen, yellow; wings and tail like the male, but the white on the wings tinged with yellow.

The young birds of each sex are coloured like the adults, but the tints are not so pure, and paler.

Male.—L., 5; W., 3; B., 6; T., ·9.

Female.—L., 4·75; W., 2·85; B., ·55; T., ·85.

Egg.—White, with spots of purplish-grey, often forming a ring near the larger end; length, ·75; breadth, ·6.

Hab.—South Island; Chatham Islands?

"The Yellow-breasted Tit is the South Island representative of the preceding species, which is only found north of Cook Strait. It appears, however, to enjoy a wider geographical range; for I obtained specimens at the Chatham Islands, and the Antarctic Expedition brought some from Auckland Island.

"The habits of this species are similar to those of its northern ally (*M. toitoi*), except that it appears to be less recluse in its manner of nidification."—Buller.

"This familiar little bird is one of the most elaborate nest-builders amongst the denizens of the bush, or, rather, of its outskirts. The nest varies much in shape, according to position: frequently we have found it in the holes of trees; and a favourite site is immediately under the head of the ti tree (*Cordyline australis*). Two nests which we presented to the Canterbury Museum were of remarkable shape: one, a firm compact structure, placed in the forked head of a ti tree, resembled a very neat moss basket with a handle across the top; the second, also from a ti tree, owing, perhaps, to the

foundation slipping between the leaves, was built up till it reached the great length of 16 inches. We have found others placed on a rock; and one, now in the Colonial Museum, was built between the brace and shingles in the roof of an empty cottage."—Potts.

28. Petrœca longipes. *Less.*

Wood Robin. Toutouwai.

Greyish-black, with a small white spot over the bill, and a broad band of pure white from the breast to the tail.

Young.—Very little white on the abdomen, and frontal spot obscure.

L., 6·66; W., 3·75; B., ·75; T., 1·48.

Egg.—Like *P. albifrons.*

Hab.—North Island.

"This species is confined to the North Island, where it is very common in all the wooded parts of the country: but it is represented in the South Island by a closely-allied and equally common species, the *Miro albifrons*. There is a specimen of the North-Island Robin in the Auckland Museum said to have been obtained at Nelson; but I have never found this bird south of Cook Strait, and *vice versâ* as regards the South-Island Robin. The two species may therefore be regarded as true representatives of each other in the North and South Islands respectively.

"As the popular name implies, it is naturally a tame bird; and in little-frequented parts of the country it is so fearless and unsuspicious of man that it will approach to within a yard of the traveller, and sometimes will even perch on his head or shoulder. It is the favourite companion of the lonesome wood-cutter, enlivening him with its cheerful notes; and when, sitting on a log, he partakes of his humble meal, it hops about at his feet, like the traditional Robin, to 'pick up the crumbs.' Like its namesake in the Old Country, moreover, it is noisy, active, and cheerful. Its note is generally the first to herald the dawn, while it is the last to be hushed when the evening shades bring gloom into the forest."—Buller.

29. Petrœca albifrons. *Gml.*

Wood Robin.

Blackish-grey, with a small white spot over the bill, and a broad band of yellowish-white from the breast to the tail.

The young has very little white on the abdomen, and the spot over the bill is obscure.

L., 7·5; W., 4; B., ·85; T., 1·5.

Egg.—Dull white, with greyish-brown marks, principally at the larger end; length, 1; breadth, ·7.

Hab.—South Island.

30. Petrœca traversi. *Buller.*

Chatham-Island Robin.

The whole of the plumage black, the base of the feathers dark plumbeous; wing-feathers and their coverts tinged with brown, the former greyish on their inner surface; tail-feathers, black, very slightly tinged with brown; irides, dark brown; bill, black; tarsi and toes, blackish-brown, the soles of the feet dull yellow.

Female.—Slightly smaller than the male, and without the brown tinge on the wings and tail.

L., 6; W., 3·4; B., ·7; T., 1·1.

Discovered in 1871 by Mr. Henry Travers, after whom the species is named.

Hab.—Chatham Islands.

ANTHUS. *Becht.*

Bill, slightly notched at the tip; first, second, and third quills equal, and longest; tail, emarginate; tarsi, longer than the middle toe; lateral toes, equal; hind claw, very long.

Found in most parts of the world.

31. Anthus novæ-zealandiæ. *Gml.*

GROUND-LARK. PIHOIHOI.

Above, greyish-brown; below, white, with brown spots on the breast; cheeks, white, with brown spots; a blackish-brown line through the eye; outside tail-feathers, white.

L., 7; W., 3·5; B., ·7; T., ·1.

Egg.—Greyish-white, speckled all over with greyish-brown; length, ·8; breadth, ·7.

Albino varieties occasionally occur.

Hab.—Both Islands.

"It is common throughout the country, frequenting the open land, and sometimes resorting to the dry sands along the sea-shore. During the summer and autumn it is gregarious, and may then be observed in flocks varying in number from half-a-dozen to fifty or more, alternately collecting and mounting in the air with a loud cheerful note, and scattering themselves again on the open ground to search for their food, which consists of insects and their larvæ, small earthworms, and occasionally minute seeds as well. They are always plentiful on the settlers' farms, and may be seen during the summer months perched in large parties on the roofs of the country houses or on the surrounding fences and outbuildings. They may sometimes be observed in similar situations within the towns, and notably on the roofs of churches and other lofty edifices. They love to resort to the roads and beaten paths, where they amuse the traveller by their playfulness, running before him as he advances, then rising in the air with a sharp but pleasant chirp, settling down again and running forward as before. During the heat of the day they may often be seen sitting on the logs or fences with their beaks wide open as if gasping for air. They repose at night on the ground, finding shelter among the grass or fern on the open ridges or on the wayside, where the benighted traveller, as he plods along, may often disturb them and hear the sharp rustling of their wings as they rise startled at his very feet."—BULLER.

TURDIDÆ. THRUSHES.

Bill, strong, notched near the tip; nostrils generally protected by a scale.

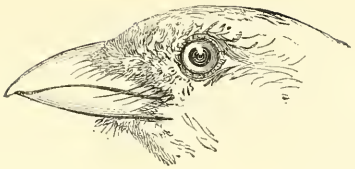
TURNAGRA. *Lesson.*

Bill, broad, arched, gape furnished with bristles; wings, rounded; tail, long; tarsi, strong, longer than the middle toe.

New Zealand only.

THE NORTH ISLAND THRUSH. THE SOUTH ISLAND THRUSH.
TURNAGRA HECTORI. TURNAGRA CRASSIROSTRIS.

PL. XI. p. 25.



32. Turnagra crassirostris. *Gml.*

THICK-BILLED THRUSH.

(Plate XI.)

Above, olive-brown; below, olivaceous, streaked with white; tinged with ferruginous on the throat, and yellow on the abdomen; tail, and some of the wing-coverts, ferruginous; fifth and sixth quills equal, and longest.

L., 10·5; W., 5; B., 1; T., 1·2.

Hab.—South Island.

"This fine species is confined to the South Island. Formerly it was excessively abundant in all the elevated wooded country; but of late years it has become comparatively scarce, while in some districts it has disappeared altogether. This result is attributable, in a great measure, to the ravages of cats and dogs, to which this species, from its ground-feeding habits, falls an easy prey."—BULLER.

33. Turnagra hectori. *Buller.*

THRUSH. PIOPIO.

(Plate XI.)

Above, olive-brown, marked with ferruginous on the top of the head and wing-coverts; throat, white; breast, olivaceous grey; abdomen, yellowish-white; tail, ferruginous; fourth and fifth quills equal, and longest.

L., 11; W., 5; B., 1; T., 1·25.

Hab.—South part of the North Island.

"Comparatively common in all suitable localities throughout the southern portion of the North Island, this bird is extremely rare in the country north of Waikato. A specimen which I shot in the Kaipara district in the summer of 1852 (doubtless a straggler from the south) was quite a novelty to the natives in that part of the country; it was recognized, however, by one old Maori, who called it a 'Korohea,' a name quite unknown in the South, and who stated that in former years it was very abundant in all the woods. . . .

"His song consists of five distinct bars, each of which is repeated six or seven times in succession; but he often stops abruptly in his overture to introduce a variety of other notes, one of which is a peculiar rattling sound, accompanied by a spreading of the tail, and apparently expressive of ecstasy. Some of the notes are scarcely distinguishable from those of the Yellowhead; and I am inclined to think that the bird is endowed with mocking-powers. The ordinary note, however, of the Piopio, whence it derives its name, is a short, sharp, whistling cry, quickly repeated."—BULLER.

MUSCICAPIDÆ. Fly-catchers.

Bill, weak, broad at the base, where it is furnished with bristles; legs, short and weak.

Rhipidura. *Vig. and Horsf.*

First quill short, fourth and fifth longest; tail, very long, fan-shaped; tarsi, longer than the middle toe, hind toe long.
India, Australia, Samoa Islands.

34. Rhipidura flabellifera. *Gml.*

Pied Fantail. Piwakawaka.

Head and neck, blackish-grey, with white throat and eyebrows; back, brown; breast and abdomen, yellowish-rufous; two middle tail-feathers black, with white tips, outer ones white, intermediate white, with the outer webs partly black, the shafts all white.
L., 6; W., 3; B., ·5; T., ·8; Tail, 3·75.
Egg.—White, with brownish-grey spots towards the larger end; length, ·7; breadth, ·5.
Hab.—Both Islands.

"The Pied Fantail, ever flitting about with broadly-expanded tail, and performing all manner of fantastic evolutions, in its diligent pursuit of gnats and flies, is one of the most pleasing and attractive objects in the New Zealand forest.

"It is very tame and familiar, allowing a person to approach within a few feet of it without evincing any alarm; sometimes, indeed, perching for an instant on his head or shoulders. It will often enter the settler's house in the bush, and remain there for days together, clearing the window-panes of sand-flies, fluttering about the open rooms with an incessant lively twitter during the day, and roosting at night under the friendly roof. It is found, generally in pairs, on the outskirts of the forest, in the open glades, and in all similar localities adapted to its habits of life. It loves to frequent the wooded banks of mountain streams and rivulets, where it may be seen hovering over the surface of the water collecting gnats; and I have counted as many as ten of them at one time so engaged. It affects low shrubby bushes and the branches of fallen trees; but it may often be seen catering for its insect-food among the topmost branches of the high timber.

"In winter it generally frequents the darker parts of the forest, where insect-life is more abundant at that season; but it is nevertheless to be met with, wherever there is any bush, all the year round. It is a true Fly-catcher, subsisting entirely by the chase; darting forth from its perch, it performs a number of aërial evolutions in pursuit of invisible flies, the snapping of its mandibles as it catches its prey being distinctly audible, and generally returns to the twig from which it started. It hops about along the dry branches of a prostrate tree, or upwards along the tangled vines of the kareao (*Rhipogonum scandens*), with its tail half expanded and its wings drooping, seizing

a little victim at almost every turn, and all the while uttering a pleasant twitter. When hurt or alarmed it immediately closes its pretty fan, and silently flies off in a direct course, disappearing in the denser foliage."—Buller.

35. Rhipidura fuliginosa. *Sparrm.*

Black Fantail. Tiwakawaka.

Head and neck, greyish-black; back, breast, and abdomen, dark olivaceous-brown; quills, dark brown; tail, black; a white spot over each ear. The white spot is sometimes absent.

L., 6·25; W., 2·8; B., ·4; T., ·72; Tail, 3·75.

Egg.—Same as *R. flabellifera.*

Hab.—South Island; Chatham Islands.

"This dark-coloured species is restricted to the South Island, where it is far more common than the preceding one."—Buller.

Several instances of its accidental occurrence in the North Island are recorded in the Transactions of the N.Z. Institute.

LANIIDÆ. Shrikes.

Bill, rather long, straight, arched above, sides compressed at the tip, which is emarginated, and generally hooked; tail, long; tarsi, strong; toes, moderate; hind toe broadly padded beneath.

Graucalus. *Cuvier.*

Bill, strong, broad at the base; nostrils, lateral, large, and rounded, partly covered by projecting feathers; wings pointed; first feather short, third the longest, fourth and fifth longer than second; tail, slightly emarginated, and rounded on the sides; tarsi rather longer than the middle toe; outer toe longer than the inner one.

Australia.

36. Graucalus melanops. *Lath.*

Shrike Thrush.

Light ash-grey; abdomen and lower tail-coverts, white; a broad band of black from the bill through the eye; middle tail-feathers dark grey, lateral ones brownish-black, tipped with white; quills, brownish-black, edged with white; bill and legs black.

L., 13·5; W., 8; B., 1·25: T., 1·1.

Hab.—New South Wales. An occasional visitant in New Zealand.

CORVIDÆ Crows.

Bill, strong, more or less conical, base covered with projecting feathers; legs and feet, strong.

Glaucopis. *Gml.*

Bill, short, much arched; tongue, plicate, quadrifid, fringed at the tip; wings, rounded; tail, long, graduated, each feather ending in a point; tarsi, longer than the middle toe; hind toe, long.

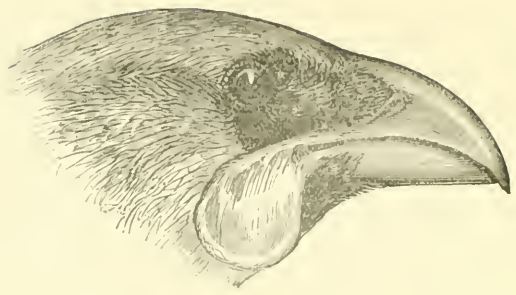
New Zealand only.

37. Glaucopis wilsoni. *Bp.*

Blue-wattled Crow. Kokako.

(Plate XII.)

Dark bluish-grey, with the lower part of the back and abdomen tinged with rufous-brown; tail, olivaceous-black; a black line from the nostrils to the eye; chin, black;



wattle, unicolor, varying from bright blue to purple; in the female, the back, wings, and tail are brownish-olive, and the wattle is smaller than in the male.

L., 13·25; W., 6; B., ·9; T., 2·24.

The female is larger than the male.

Hab.—North Island.

"This singular representative of the Crow family is sparingly dispersed over the North Island, being very local in its distribution. It is met with more frequently in the wooded hills than in the low timbered bottoms, but its range is too eccentric to be defined with any precision. During many years' residence at Kaipara, north of Auckland, I never obtained more than five specimens, all of which were shot in the low-wooded spurs of the Tangihua ranges. In particular localities, however, even further north, it is comparatively plentiful: for example, between the headwaters of the Wairoa and Whangarei Rivers there are several strips of forest in which I never failed to meet with the Kokako; and in the Kaitara Ranges, in the Whangarei district, it was, till within the last few years, rather abundant. . . . .

"The notes of the male are loud and varied; but the most noticeable one is a long-drawn organ-note of surpassing depth and richness."—Buller.

38. Glaucopis cinerea. *Gml.*

Orange-wattled Crow.

(Plate XII.)

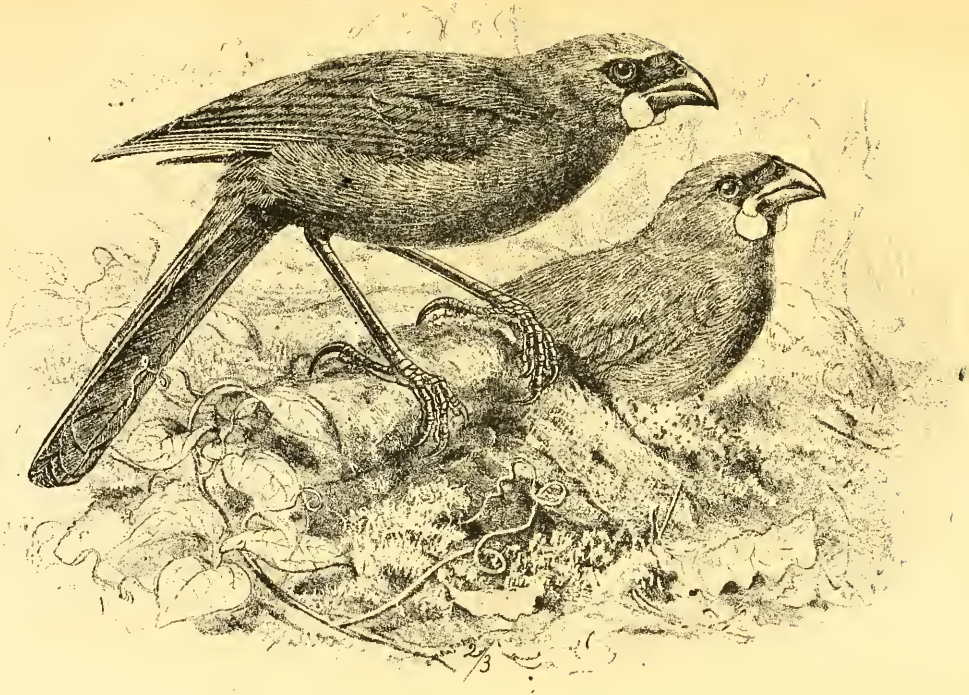
Similar in colour to the last, except that the tail is only blackish at the tip; wattle, bicolor, point of attachment blue, the rest red or orange.

L., 13·5; W., 6·25; B., 1; T., 2·5.

Female.—Rather larger than the male.

Hab.—South Island.

"This species is the South Island representative of *Glaucopis wilsoni*, to which it bears a general resemblance, except in the colour of its wattles and its rather smaller size. Like the North Island species, also, its distribution is very irregular: thus, in Otago, Dr. Hector found it very plentiful on Mount Cargill and in a strip of bush



THE BLUE-WATTLED CROW.
GLAUCOPIS WILSONI.

THE ORANGE-WATTLED CROW.
GLAUCOPIS CINEREA.

THE SADDLE-BACK.

CREADION CARUNCULATUS.

Pl. XIII. *p.* 29.

near Catlin's River, but never in the intervening woods; while in the Nelson Province, as I am informed by Mr. Travers, its range is exclusively restricted to certain well-defined localities, although the berries on which it is accustomed to feed abound everywhere. It is said to be very abundant on some of the wooded ranges of Westland, and Dr. Haast has obtained numerous specimens from the Oxford Ranges, in the Province of Canterbury."—Buller.

STURNIDÆ. Starlings.

Bill, conical, pointed, straight, or slightly curved.

Aplonis.

Bill, rather short, arched above; first quill spurious, second nearly as long as third and fourth, which are longest; tail, moderate, even; tarsi, longer than middle toe; hind toe, long, robust.

Australia and Pacific Islands.

39. Aplonis zealandicus. *Quoy and Gaim.*

Olivaceous-brown; under-surface ashy, tinged with yellow; quills, tertials, and tail-feathers, rufous; over the tail, paler rufous.

L., 6.

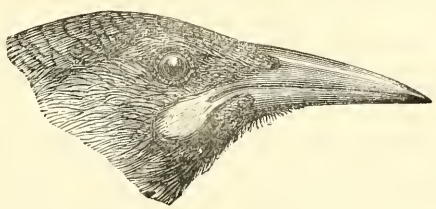
Hab.—Tasman's Bay.

"This is an excellent and typical species, which I had the pleasure of seeing in the Leiden Museum, being one of the typical specimens brought home by the 'Astrolabe' expedition. Dr. Hautlaub informs me that there are three specimens in the Museum in Paris, all marked 'Tasman's Bay, N.Z.,' and collected by the French travellers."—Finsch.

Creadion. *Vieill.*

Bill, straight, longer than the head; wings, short, rounded, fourth to sixth feathers equal and longest.

New Zealand only.



40. Creadion carunculatus. *Gml.*

Saddle-back. Tieke.

(Plate XIII.)

Black, with the back and wing-coverts ferruginous.

Young.—Brown, with the lower part of the back and vent more or less ferruginous.

L., 9·5; W., 3·5; B., 1·3; T., 1·6.

Egg.—White, spotted with brownish-grey and violet; length, 1·15; breadth, ·9.

Hab.—Both Islands.

"This bird derives its popular name from a peculiarity in the distribution of its two strongly-contrasted colours, black and ferruginous, the latter of which covers the back, forms a sharply-defined margin across the shoulders, and sweeps over the wings in a manner suggestive of saddle-flaps. The colours, in the male bird especially, are of so decided a kind as to attract special attention, to say nothing of the loud notes and eccentric habits of this remarkable bird. The bill is strong, sharply cut, and wedge-shaped, being well adapted for digging into decaying vegetable matter in search of larvæ, grubs, and insects, on which this species largely subsists. From the angle of the mouth on each side there hangs a fleshy wattle, or caruncle, shaped like a cucumber-seed, and of a changeable bright yellow colour. The wings are short and feeble, and the flight of the bird, though rapid, is very laboured, and always confined to a short distance.

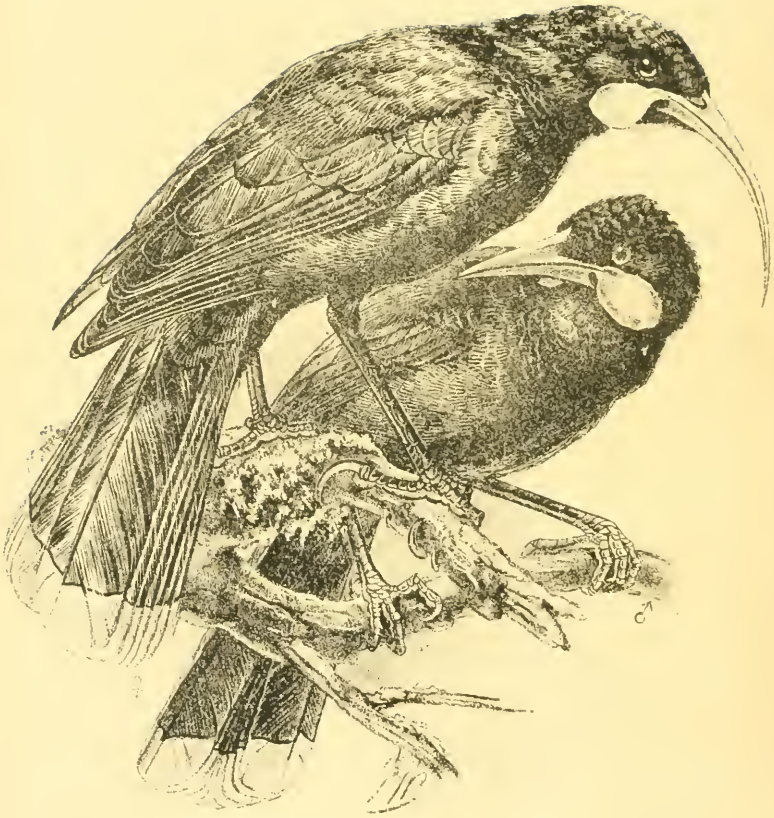
"The range of this species extends as far north as the Lower Waikato, beyond which district it is only rarely met with. It is numerous in the wooded ranges between Waikato Heads and Raglan, and is occasionally found in the neighbourhood of the Hunua Coal-fields; but I have never heard of its occurrence in the Tauranga district, on the East Coast, although I have an excellent ornithological correspondent there. In the summer of 1852 I obtained a pair at the Kaipara; but the bird was decidedly a *rara avis*, few of the Natives in that part of the country being familiar with it. . . . . .

"Active in all its movements, it seldom remains more than a few seconds in one position, but darts through the branches or climbs the boles of the trees, performing the ascent by a succession of nimble hops, and often spirally. It is naturally a noisy bird, and when excited or alarmed becomes very clamorous, hurrying through the woods with cries of 'tiaki-rere,' quickly repeated. At other times it has a scale of short flute-notes, clear and musical; but the most remarkable exhibition of its vocal powers takes place during the breeding-season, when the male performs to his mate in a soft strain of exquisite sweetness. This love-song is heard only on a near approach, and it is at first difficult to believe that so clamorous a bird could be capable of such tender strains."—Buller.

Heteralocha. *Gray.*

Bill, acutely pointed; fifth, sixth, and seventh quills equal, and longest; tarsi, much longer than the middle toe; hind toe about one-half the length of the tarsus; tongue, not extensile, furnished with fibrillæ for one-third of its length from the tip.

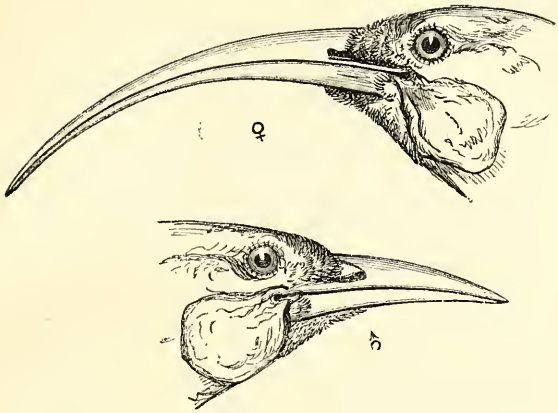
New Zealand only.



THE HUIA.

HETERALOCHA ACUTIROSTRIS.

PL. XIV. *p.* 31.



41. Heteralocha acutirostris. *Gould.*

HUIA.

(Plate XIV.)

Glossy black, with a band of white at the end of the tail; wattle, large, and orange colour; bill, white.

Male.—L., 19·25; W., 8; B., 2·3; T., 3·2.

Female.—L., 21·5; W., 8·3; B., 4·3; T., 3·2.

Hab.—South part of the North Island.

"It is confined within narrow geographical boundaries, being met with only in the Ruahine, Tararua, and Rimutaka mountain-ranges, with their divergent spurs, and in the intervening wooded valleys. It is occasionally found in the *Fagus* forests of the Wairarapa Valley, and in the rugged country stretching to the westward of the Ruahine Range, but it seldom wanders far from its mountain haunts. . . . .

"In the summer of 1864 I succeeded in getting a pair of live ones. They were caught by a Native in the ranges, and brought down to Manawatu, a distance of more than fifty miles, on horseback. The owner refused to take money for them, but I negotiated an exchange for a valuable greenstone. I kept these birds for more than a year, waiting a favourable opportunity of forwarding them to the Zoological Society of London. . . . .

"It was amusing to note their treatment of the huhu. This grub, the larva of a large nocturnal beetle *(Prionoplus reticularis)*, which constitutes their principal food, infests all decayed timber, attaining at maturity the size of a man's little finger. Like all grubs of its kind, it is furnished with a hard head and horny mandibles. On offering one of these to the huia he would seize it in the middle, and, at once transferring it to his perch and placing one foot firmly

upon it, he would tear off the hard parts, and then, throwing the grub upwards to secure it lengthwise in his bill, would swallow it whole. For the first few days these birds were comparatively quiet, remaining stationary on their perch as soon as their hunger was appeased. But they afterwards became more lively and active, indulging in play with each other, and seldom remaining more than a few moments in one position. I sent to the woods for a small branched tree, and placed it in the centre of the room, the floor of which was spread with sand and gravel.

"It was most interesting to watch these graceful birds hopping from branch to branch, occasionally spreading the tail into a broad fan, displaying themselves in a variety of natural attitudes, and then meeting to caress each other with their ivory bills, uttering at the same time a low affectionate twitter. They generally moved along the branches by a succession of light hops after the manner of the Kokako *(Glaucopis cinerea)*; and they often descended to the floor, where their mode of progression was the same. They seemed never to tire of probing and chiselling with their beaks. Having discovered that the canvas lining of the room was pervious, they were incessantly piercing it, and tearing off large strips of paper, till, in the course of a few days, the walls were completely defaced. But what interested me most of all was the manner in which the birds assisted each other in their search for food, because it appeared to explain the use, in the economy of nature, of the differently-formed bills in the two sexes. To divert the birds, I introduced a log of decayed wood infested with the huhu grub. They at once attacked it, carefully probing the softer parts with their bills, and then vigorously assailing them, scooping out the decayed wood till the larva or pupa was visible, when it was carefully drawn from its cell, treated in the way described above, and then swallowed. The very different development of the mandibles in the two sexes enabled them to perform separate offices. The male always attacked the more decayed portions of the wood, chiselling out his prey after the manner of some Woodpeckers, while the female probed with her long pliant bill the other cells, where the hardness of the surrounding parts resisted the chisel of her mate."—Buller.

THE KAKAPO.
STRINGOPS HABROPTILUS.

PL. XIVa. *p.* 33.

ORDER III. SCANSORES: CLIMBERS.

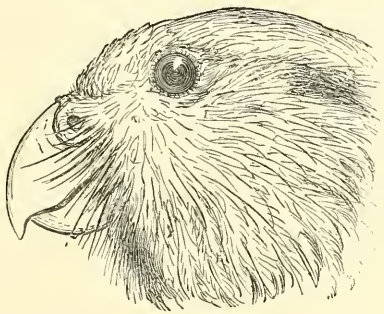
Toes, two in front, and two behind.

PSITTACIDÆ. Parrots.

Bill, strong, hooked; base covered by a cere.

Stringops. *Gray.*

Bill, rather short; base covered by feathers, the shaft of each prolonged into a hair; lower mandible grooved longitudinally; fifth quill the longest; tail, rounded, the end of each feather pointed; tarsi, short and strong.
New Zealand and Chatham Islands.



42. Stringops habroptilus. *Gray.*

Ground Parrot. Kakapo.

(Plate XIV.)

Above, green, varied with brown; below, yellow-green, varied with brown and yellow-white.
L., 25; W., 11; B, 1·5; T., 1·75.
Very variable in size.
Egg.—White; length, 1·9; breadth, 1·4.
Hab.—Both Islands, and Chatham Islands.
Note.—*Stringops greyi* (Gray) is a mere variety.

"This is one of the very remarkable forms peculiar to New Zealand, and has been appropriately termed an Owl-Parrot. As its name *Stringops* indicates, its face bears a resemblance to that of an Owl; and our knowledge of the structure and habits of the bird would seem to prove that it supplies in the grand scheme of Nature the connecting link between Owls and Parrots. In all the essential characteristics of structure it is a true Parrot; but in the possession of a facial disc (in which respect it differs from all other known Parrots), in the soft texture of its plumage, and especially in its decidedly nocturnal habits, it betrays strong affinities to the Owl tribe. . . . .

"According to Native tradition, the Kakapo was formerly abun-

dant all over the North and South Islands; but at the present day its range is confined to circumscribed limits, which are becoming narrower every year."—Buller.

"During the day it remains hidden in holes under the roots of trees or rocks, or very rarely perched on the boughs of trees with a very dense thick foliage. At these times it appears stupid from its profound sleep, and, if disturbed or taken from its hole, immediately runs and tries to hide itself again, delighting, if practicable, to cover itself in a heap of soft dry grass. About sunset it becomes lively, animated, and playful, issues forth from its retreat, and feeds on grass, weeds, vegetables, fruit, seeds, and roots. When eating grass it grazes rather than feeds, nibbling the grass in the manner of a rabbit or wombat. It sometimes climbs trees, but generally remains upon the ground, and only uses its short wings for the purpose of aiding its progress when running, balancing itself when on a tree, or in making a short descent, half-jump half-flight, from an upper to a lower bough. When feeding, if pleased with its food, it makes a continued grunting noise. It is a greedy bird, and choice in its food, showing an evident relish for anything of which it is fond."—Sir G. Grey.

Platycercus. *Vigors.*

Bill, moderate; second and third quills the longest, outer webs of second, third, and fourth quills suddenly dilated near the base; tail long; tarsi shorter than middle toe.
Australia, New Guinea, Polynesia.

43. Platycercus novæ-zealandiæ. *Sparrm.*

Red-fronted Parrakeet. Kakariki.

(Plate XV.)

Bright-green, with blue on the wings; forehead and top of the head, crimson.
L., 11; W., 6; B., ·6; T., ·87.
Egg.—White; oval; length, 1·1; breadth, ·8.
Hab.—Both Islands; Chatham Islands, New Caledonia, Auckland Islands, Norfolk Island, Macquarie Island.

"The Red-fronted Parrakeet is very generally dispersed over the whole country, but is more plentiful in the southern portion of the North Island than in the far north, where the yellow-fronted species predominates. It frequents every part of the bush, but appears to prefer the outskirts, where the vegetation is low and shrubby, as also the wooded margins of creeks and rivers. It is often met with among the dense koromiko (*Veronica*) which covers the low river-flats, or among the brushes of *Leptospermum* and other scrub. It seldom ventures beyond the shelter of the woods, unless it be to visit the farmer's fields for its tithe of grain, or to reach some distant feeding-place, when it rises rather high in the air and flies rapidly, but in

THE RED-FRONTED PARRAKEET.
PLATYCERCUS NOVÆ-ZEALANDIÆ.

THE YELLOW-FRONTED PARRAKEET.
PLATYCERCUS AURICEPS.

a rather zig-zag course. When on the wing it utters a hurried chattering note; and when alarmed, or calling to its fellows, it emits a cry resembling the words 'twenty-eight,' with a slight emphasis on the last syllable. It often resorts to the tops of the highest trees, but may always be enticed downwards by imitating this note. It is gregarious, forming parties of from three to twelve, or more, in number, except in the breeding-season, when it is generally met with in pairs. . . . .

"A hole in a decaying or dead tree affords this species a natural breeding-place, the eggs being laid on the pulverized rotten wood at the bottom; for there is no further attempt at forming a nest."—BULLER.

44. Platycercus auriceps. *Kuhl.*

YELLOW-FRONTED PARRAKEET. KAKARIKI.

(Plate XV.)

Bright green, with blue on the wings; forehead, crimson; top of the head, yellowish-orange.
L., 9; W., 4; B., ·6; T., ·75.
Egg.—Oval; white; length, ·9; breadth, ·7.
Hab.—Both Islands; Auckland Islands.

"The Yellow-fronted Parrakeet, although generally dispersed over the country in all suitable localities, is more plentiful than the red-fronted species in the northern parts of the North Island, and less so as we approach Cook Strait. In the South Island, however, the two species appear to be more equally distributed. . . . .

"In habits this bird closely resembles the preceding one; but it is less gregarious, being seen generally in pairs. It loves to frequent the tutu bushes (*Coriaria ruscifolia*), to regale itself on the juicy berries of this bushy shrub; and on these occasions it is easily snared by the Natives, who use for that purpose a flat noose at the end of a slender rod. When feeding on the tutu-berry, the whole of the interior becomes stained of a dark purple. When the wild dock has run to seed, this pretty little Parrakeet repairs to the open fields and feasts on the ripe seeds of that noxious weed. At other seasons the berries of *Coprosma lucida*, *Fuchsia excorticata*, and other forest shrubs afford it plentiful and agreeable nutriment."—BULLER.

45. Platycercus alpinus. *Buller.*

ORANGE-FRONTED PARRAKEET.

Similar to *P. auriceps*, but smaller, and having the frontal band orange, and the vertex pale yellow.
L., 8·5; W., 4·25; B., ·5; T. ·6.
Hab.—Both Islands.

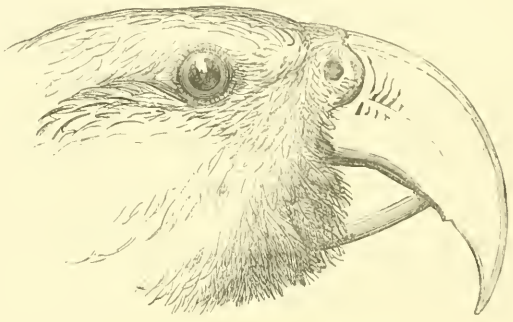
46. Platycercus rowleyi. *Buller.*

LESSER RED-FRONTED PARRAKEET.

Similar to *P. novæ-zealandiæ*, but even smaller than *P. auriceps*.
L., 9·5; W., 4·75; B., ·55; T., ·65.
Hab.—South Island.

NESTOR. *Wagl.*

Bill, much lengthened and compressed, base of the lower mandible partly hidden by projecting feathers; wings, long, rather pointed; tail, moderate, even at the end; tip of the tongue fringed.
New Zealand, Norfolk Island, Phillip Island.



47. Nestor meridionalis. *Gml.*

BROWN PARROT. KAKA.

(Plate XVI.)

Olive-brown; top of the head, grey; abdomen, and over the tail, purplish-red; ears, yellowish; at the back of the neck a ring of yellowish-red; third and fourth quills equal, and longest.
L., 19·5; W., 11; B., 1·6; T., 1·2.
Varies much in size and colour, sometimes entirely yellow and red; albinoes also occur. Varieties distinguished as Kaka-kura, Kaka-kereru, Kaka-pipiwarauroa, and Kaka-korako.
Egg.—Ovoid; white; length, 1·75; breadth, 1·25.
Hab.—Both Islands.

"Sprightly in its actions, eminently social, and more noisy than any other inhabitant of the woods, the Kaka holds a prominent place among our native birds. Being semi-nocturnal in its habits, it generally remains quiet and concealed during the heat of the day. If, however, the sportsman should happen to find a stray one, and to wound instead of killing it, its cries of distress will immediately rouse the whole fraternity from their slumbers, and all the Kakas within hearing will come to the rescue, and make the forest echo with their discordant screams. Unless, however, disturbed by some exciting cause of this sort, they remain in close cover till the approach of the cooler hours. Then they come forth with noisy clamour, and may be seen, far above the tree-tops, winging their way to some favourite feeding-place; or they may be observed climbing up the

THE BROWN PARROT OR KAKA.
NESTOR MERIDIONALIS.

PL. XVI. *p.* 36.

rough vine-clad boles of the trees, freely using their powerful mandibles, and assuming every variety of attitude, or diligently tearing open the dead roots of the close epiphytic vegetation in their eager search for insects and their larvæ. In the spring and summer, when the woods are full of wild blossom, these birds have a prodigality of food, and may be seen alternately filling their crops with a variety of juicy berries, or sucking nectar from the crimson flowers of the rata (*Metrosideros robusta*—a flowering branch of which is depicted in the plate) by means of their brush-fringed tongues.

"With the earliest streaks of dawn, and while the underwoods are still wrapped in darkness, the wild cry of this bird breaks upon the ear with a strange effect. It is the sound that wakes the weary traveller encamped in the bush; and the announcement of his ever-active Maori attendant, 'Kua tangi te Kaka,' is an intimation that it is time to be astir. But, although habitually recluse during the day, it is not always so. During gloomy weather it is often very active; and sometimes even in the bright sunshine a score of them may be seen together, flying and circling about, high above the tree-tops, uttering their loud screams and apparently bent on convivial amusement. When the shades of evening bring a deeper gloom into the depths of the forest, and all sounds are hushed, save the low hoot of the waking Morepork, or the occasional '*cheep-cheep*' of the startled Robin, the Kaka becomes more animated. It may then be heard calling to its fellows in a harsh rasping note, something like the syllables '*t-chrut, t-chrut,*' or indulging in a clear musical whistle with a short refrain.

"It is strictly arboreal in its habits, and subsists to a large extent on insects and their larvæ, so that it is probably one of our most useful species. Where they exist in large numbers they must act very beneficially on the timber-forests; for in the domain of Nature important results are often produced by apparently trivial agencies. Like all the honey-eaters, while supplying their own wants they do good service with their brush-tongues, by fertilizing the blossoms of various trees, and thus assisting in their propagation; while, on the other hand, the diligent search they prosecute for insects and grubs, and the countless numbers daily consumed by each individual, must materially affect the economy of the native woods."—Buller.

48. Nestor occidentalis. *Buller.*

Brown, with a grey forehead; rest of the colours like the last; cere, very small; fourth quill the longest.

L., 16·5; W., 10·5; B., 1·65; T., 1·1.

Hab.—West Coast of the South Island.

"The range of this bird is very limited. It frequents the precipitous wooded cliffs in the neighbourhood of George Sound, and thence along the coast to Milford Sound. I never met with it in the forests of the low-lands. It is more active in its habits and more hawk-like in its flight than the common *Nestor*. It often sweeps suddenly to the ground, and its cry differs from that of the common Kaka in being more shrill and wild."—Hector.

49. Nestor notabilis. *Gould.*

Mountain Parrot. Kea.

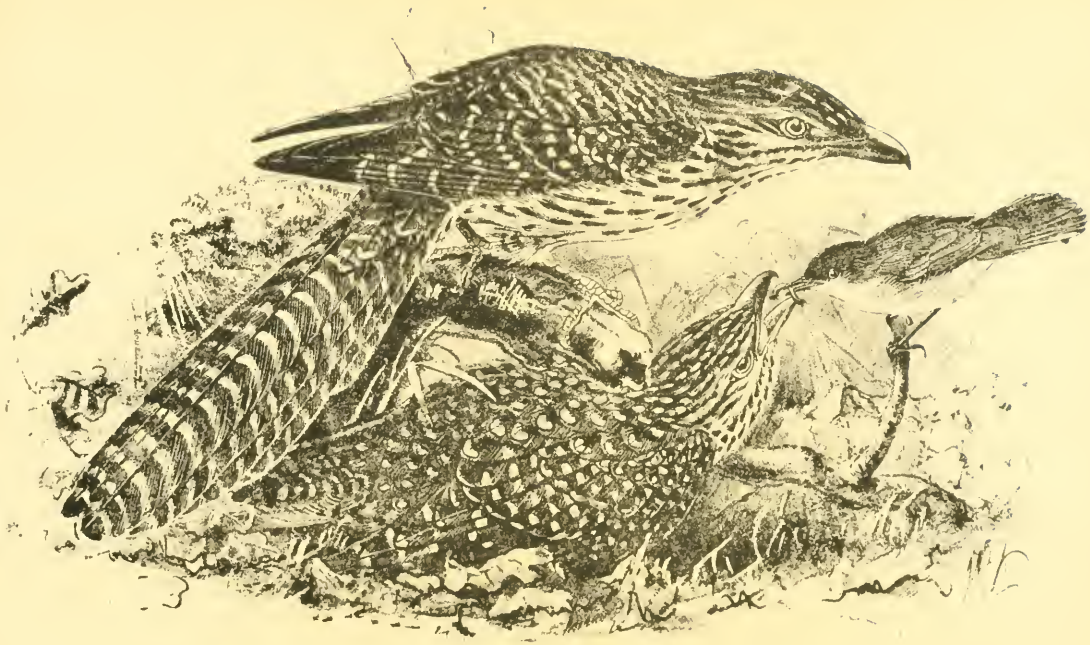
Brownish-green, barred with black; over the tail, reddish; some blue on the wings; tail, green, with a black bar near the tip; feathers pointed, fourth quill the longest, third nearly equal to it.

L., 22; W., 13; B., 1·5; T., 1·3.

Hab.—South Island.

"The rigour of a hard winter, when the whole face of the alpine country is changed so as to be scarcely recognizable under a deep canopy of snow, is not without its influence on the habits of this bird. It is then driven from its stronghold in the rocky gully, and compelled to seek its food at a far less elevation, as its food supply has passed away gradually at the approach of winter, or lies buried beyond its reach. The honey-bearing flowers have faded and fallen long before; the season that succeeded, with its lavish yield of berries, and drupes that gaily decked the close-growing *Coprosmas*, the trailing *Pimelias*, or the sharp-leaved *Leucopogon*, has succumbed to the stern rule of winter. . . . . It is during the continuance of this season that we have had the best opportunities of becoming somewhat familiar with it. Within the last few years it has discovered the out-stations of some of the back-country settlers. The meat-gallows is generally visited by night; beef and mutton equally suffer from the voracity of the Kea, nor are the drying sheepskins despised. . . . . They also attack the live sheep. The birds come in flocks, single out a sheep at random, and each, alighting on its back in turn, tears out the wool and makes the sheep bleed, till the animal runs away from the rest of the sheep. The birds then pursue it, continue attacking it, and force it to run about till it becomes stupid and exhausted. If, in that state, it throws itself down, and lies as much as possible on its back to keep the birds from picking the part attacked, they then pick a fresh hole in its side, and the sheep when so set upon in some instances die."—Potts.

"Dr. Hector found these birds rather plentiful in the snow-mountains of the Otago Province, and so tame that it was easy to knock them over with a stone or other missile. On the level ground



THE LONG-TAILED CUCKOO.
(Adult and Young.)
EUDYNAMIS TAITENSIS.

their mode of locomotion is similar to that of the Kaka, consisting of a hopping rather than a walking movement. In addition to the *mewing* cry noticed by Mr. Potts, the Kea utters a short whistle, a chuckle, and a suppressed scream, scarcely distinguishable from the notes of the Kaka (*Nestor meridionalis*)."—Buller.

CUCULIDÆ. Cuckoos.

Bill, moderate, or slender, slightly curved; wings and tail, long.

Eudynamis. *Vig. and Horsf.*

Bill, strong, arched; fourth quill the longest; tail, very long.
Australia, Polynesia, Indian Archipelago, India.

50. Eudynamis taitensis. *Sparrm.*

Long-tailed Cuckoo. Koekoea. Koheperoa.

(Plate XVII.)

Above, brown, banded and streaked with rufous; below, white, with streaks of brownish-black.

Young.—Above, brown, spotted with fulvous-white; below, rufous-white, streaked with dark brown.

L., 16·5; W., 7·75; B., 1·8; T., 1·3.

Migratory; leaves New Zealand in the winter.

Hab.—Both Islands; Friendly Islands, Society Islands, Marquesas Islands, Fiji Islands, Samoa Island.

"The Long-tailed Cuckoo, which is a native of the warm islands of the South Pacific, visits our country in the summer and breeds with us; but the task of rearing its young is intrusted to the Grey Warbler (*Gerygone flaviventris*), figured in our plate—a species that performs the same friendly office for the Shining Cuckoo (*Chrysococcyx lucidus*), another summer visitant. . . . . It begins to arrive about the second week in October, but it is not numerous till the following month, when the pairing commences. It is, however, somewhat irregularly dispersed over the country; for in the far north it is at all times a very rare bird. In the southern portion of the North Island, and throughout the wooded parts of the South Island, it is comparatively common. It is seminocturnal in its habits, and its long, shrill cry at night is generally the first intimation we get that it has arrived in the land. It appears to be most plentiful in November and December, becoming scarcer in January and disappearing altogether by the end of February.

"In the early dawn, and during the cool hours of the morning, the Long-tailed Cuckoo resorts to the low underwood and brushes; but, although its cry may be frequently heard, it is not easy to find the bird, inasmuch as the sound, though produced within a few yards of the listener, has the effect on the ear of one coming from a remote

distance. This species, in fact, appears, like some others of the same family, to be endowed with a natural ventriloquism, and its apparently far-off cry is often very deceptive.

"While searching for his food the Koheperoa moves about with much activity; but as soon as the sun is up he betakes himself to the top branches of a kahikatea or other lofty tree, where he remains closely concealed till sunset. He continues to utter, at intervals of ten or fifteen minutes, his prolonged shrill note (quite distinct from all other sounds of the forest, and very pleasant to hear) till about noon, when he remains perfectly silent for two hours or more. As soon, however, as the heat of the day is over, he resumes his cry, and shortly afterwards leaves his retreat to hunt for food again. During the quiet summer nights, too, his note may be heard at intervals till break of day.

"This species is more predatory in its habits than is usual with the members of this group. Lizards and large insects form its principal diet; but it also plunders the nests of other birds, devouring alike the eggs and young."—Buller.

Chrysococcyx. *Boie.*

Bill, broad, curved; third quill the longest; tail, rounded; tarsi, short, feathered below the knee.

The warmer portions of the Old World.

51. Chrysococcyx lucidus. *Gml.*

Shining Cuckoo. Whistler. Pipiwarauroa.

Above, shining bronzy-green; below, white, barred with bronzy-brown; outer tail-feathers barred with white, and the second with rufous.

L., 7; W., 4·25; B., ·7; T., ·75.

Egg.—Brownish-olive; length, ·75; breadth, ·5.

Hab.—Australia, Tasmania, New Caledonia, Java, Sumatra. Migratory; leaves New Zealand in the winter.

"The Shining Cuckoo is an inhabitant of Australia, and appears in New Zealand only as a summer migrant. Its cry is always welcomed by the colonists as the harbinger of spring; and during its short stay with us its sweet but plaintive notes may be heard in every grove throughout the long summer days. It makes its appearance, year after year, with surprising punctuality, arriving first in the extreme north, and about a fortnight later spreading all over the country. A correspondent informs me that for three successive years, at Whangarei (north of Auckland), he first heard its familiar note on the 21st September, and that on one occasion he noticed it as early as the 3rd of that month. Another correspondent, in the same locality, informs me, as the result of twelve years' careful observation, that this migrant invariably appears between the 17th and 21st of

THE WOOD-PIGEON.

CARPOPHAGA NOVÆ-ZEALANDIÆ.

PL. XVIII. p. 41.

September. For a period of ten years I kept a register of its periodical arrival, and noted its regular occurrence between the 5th and 10th of October. . . . .

"During its sojourn with us it subsists almost exclusively on caterpillars, and is, therefore, entitled to a place among the really useful species.

"The cry is a remarkable one, as the bird appears to be endowed with a peculiar kind of ventriloquism. It consists of eight or ten long silvery notes quickly repeated. The first of these appears to come from a considerable distance; each successive one brings the voice nearer, till it issues from the spot where the performer is actually perched, perhaps only a few yards off. It generally winds up with a confused strain of joyous notes, accompanied by a stretching and quivering of the wings, expressive, it would seem, of the highest ecstasy. The cry of the young birds is easily distinguished, being very weak and plaintive.

"Like the long-tailed Cuckoo already described, this species is parasitic in its breeding-habits, and intrusts to a stranger both the hatching and the rearing of its young."—Buller.

ORDER IV. COLUMBÆ: PIGEONS.

Bill, short, straight, curved at the tip; the base soft and tumid.

COLUMBIDÆ.

Characters same as the Order.

Carpophaga. *Selby.*

Bill, moderate; wings, pointed, third and fourth quills nearly equal and longest; tail, lengthened; tarsi, short, clothed with down below the knee; hind toe large.
Polynesia, Indian Archipelago, China.

52. Carpophaga novæ-zealandiæ. *Gml.*

Wood-pigeon. Kuku. Kereru.

(Plate XVIII.)

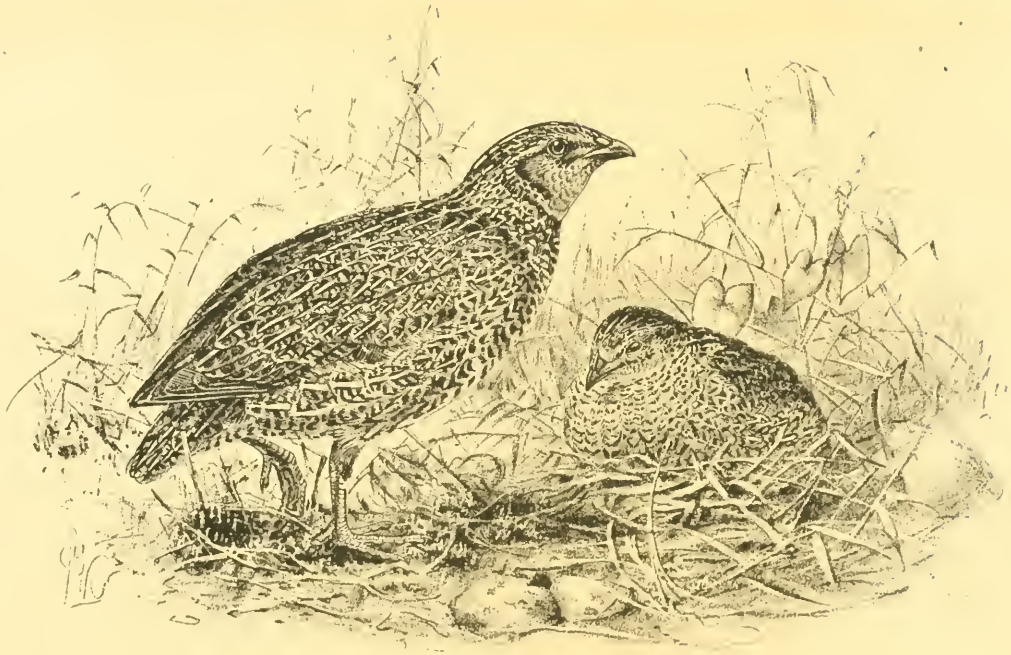
Above, coppery-purple; head, neck, and breast, coppery-green; abdomen, white; tail, greenish-black; feet, pink.
Albino varieties occur sometimes.
L., 18; W., 10; B., 1·25; T., 1·25.
Hab.—Both Islands and the Chatham Islands.

"The New-Zealand Pigeon is strictly arboreal, and appears, as a rule, to prefer the densest foliage. When not engaged in filling its

capacious crop with fruit or berries, it generally reposes on a thick limb, with the tail drooping and half spread, the wings closely folded, and the head drawn in; but on the slightest alarm it stretches up its lustrous neck, and gently sways its head to and fro, uttering a scarcely audible *coo*, slowly repeated.

"In the spring and early summer it is generally very lean and unfit for the table; but, as autumn advances and its favourite berries ripen, it rapidly improves in condition, till it becomes exceedingly fat. It is esteemed most by amateurs when feeding on the mast of the miro, which imparts a peculiar richness to the flesh. In January the berries of the kohutuhutu, poroporo, kaiwiria, puriri, mangiao, and tupakihi constitute its ordinary bill of fare. From February to April their place is supplied by those of the tawa, matai, kahikatea, mapau, titoki, and maire. It is worth remarking that in localities where it happens to be feeding exclusively on the pulpy fruit of the kahikatea it is not only in very poor condition, but acquires a disagreeable flavour from the turpentine contained in the seeds. Towards the close of this period also, the ti-palm, which comes into full bearing only at intervals of three or four years, occasionally supplies this bird with an abundant feast. These tropical-looking palms often form extensive groves in the open country or in swampy situations; and when the Pigeons resort to them they are speared and snared in great numbers by the Maoris, an expert hand sometimes taking as many as sixty in a single day. In May and June it feeds chiefly on the miro and pate, when it reaches its prime and is much sought after. From July to September it lives almost entirely on taraire in the North, and on hinau, kocka, ramarama, and other smaller berries in the South. During the months of October, November, and December it is compelled to subsist in a great measure upon the green leaves of the kowhai (*Sophora tetraptera*), and of several creeping plants. It also feeds on the tender shoots of the puwha, a kind of sow-thistle; and the flesh then partakes of the bitterness of that plant. When the bird is feeding wholly on the dark berries of the wawao the colour of its flesh is said to become affected by that of the food.

"The Pigeon-season, however, is to some extent contingent on locality: for example, in the spring of 1863, I found these birds in the Upper Manawatu living on kowhai-leaves, and so lean in body as to be scarcely worth powder and shot, while in the low-timbered flats under the ranges, where they were feeding on the ripe berries of the karaka (*Corynocarpus lævigata*), they were in excellent condition."—Buller.



THE QUAIL.

(Male and Female.)

COTURNIX NOVÆ-ZEALANDIÆ

ORDER V. GALLINÆ: GAME BIRDS.

Legs, strong, sometimes armed with a spur; hind toe, more or less developed, elevated from the ground.

TETRAONIDÆ.

Bill, broad at the base, arched; tail, rounded.

COTURNIX. *Quail.*

Bill, short; nostrils, covered by a scale; wings, moderate, first quill long, second and third the longest; tail, very short, hidden by the coverts; tarsi, short.
Warm and temperate parts of Europe, Asia, Africa, and Australia.

53. Coturnix novæ-zealandiæ. *Quoy et Gaim.*

NATIVE QUAIL. KOREKE.

(Plate XIX.)

Black, streaked with white, and varied with reddish-brown on the back, spotted with white on the breast and abdomen; throat and cheeks, rufous.
Female.—Browner, and without the rufous on the cheeks and throat.
L., 18; W., 10; B., 1·25; T., 1·25.
Egg.—Oval; buff, splashed with greenish-brown; length, 1·25; breadth, ·9.
Hab.—Both Islands.

"This handsome species—the only indigenous representative in New Zealand of the order Gallinæ—is now on the verge of extinction. In the early days of the colony it was excessively abundant in all the open country, and especially on the grass-covered downs of the South Island. The first settlers, who carried with them from the Old Country their traditional love of sport, enjoyed some excellent Quail-shooting for several years; and it is a matter of local history that Sir D. Mouro and Major Richmond, in 1848, shot as many as forty-three brace in the course of a single day within a few miles of what is now the city of Nelson: while a Canterbury writer has recorded that 'in the early days, on the plains near Selwyn, a bag of twenty brace of Quail was not looked upon as extraordinary sport for a day's shooting.' But, partly owing to the introduction of dogs, cats, and rats, and partly to the prevalence of the so-called 'bush-fires,' or burning of the runs (a necessary incident of sheep-farming in a new country), the Quail has rapidly disappeared, and it will ere long be numbered among the many extinct forms of animal life in New Zealand. Its place, however, has been more than adequately supplied by several introduced species, all of which appear to thrive well and multiply in their new home."—BULLER.

ORDER VI. STRUTHIONES: OSTRICH-LIKE.

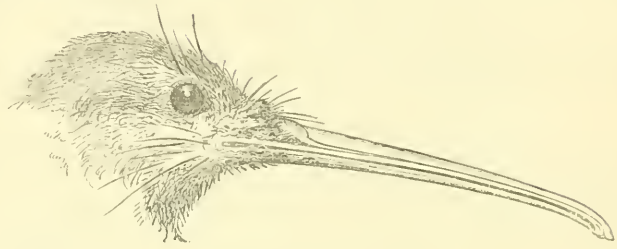
Wings, short, generally incapable of flight; legs, strong.

APTERYGINÆ.

Bill, lengthened, slender; base, covered by a long cere; nostrils, near the tip.

APTERYX. *Shaw.*

Tarsi, about the length of the middle toe, very robust; lateral toes, equal; hind toe very short.
New Zealand only.



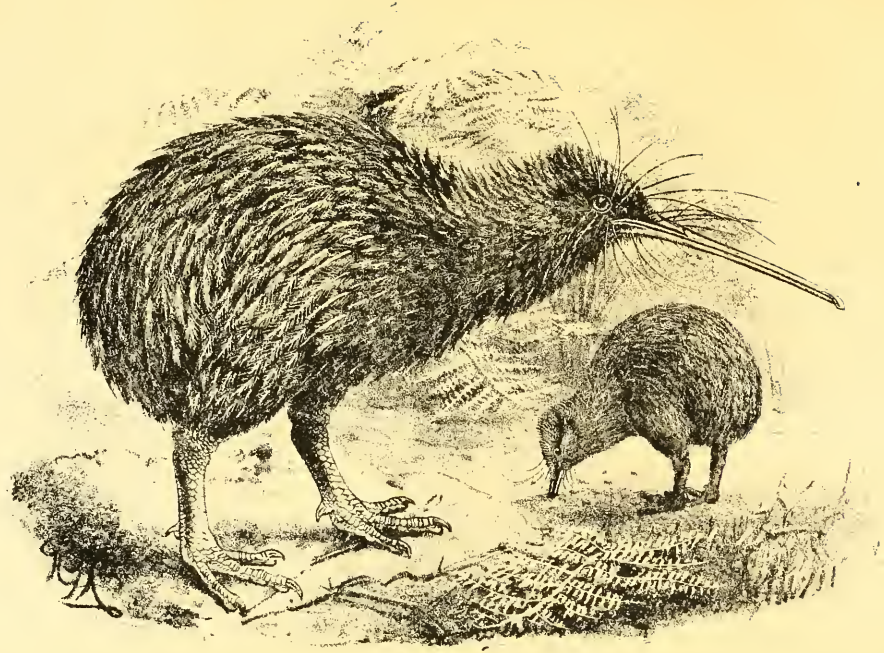
54. Apteryx mantelli. *Bart.*

NORTH ISLAND KIWI.

(Plate XXI.)

Fulvous-brown, streaked with black; feathers, harsh to the touch.
L., 21; B., 5·5; T., 2·5.
Very variable in size.
Egg.—White; oval; length, 4·75; breadth, 3·25.
Hab.—North Island; Little Barrier Island.

"The Kiwi is in some measure compensated for the absence of wings by its swiftness of foot. When running it makes wide strides and carries the body in an oblique position, with its neck stretched to its full extent, and inclined forwards. In the twilight it moves about cautiously and as noiselessly as a rat, to which, indeed, at this time it bears some outward resemblance. In a quiescent posture the body generally assumes a perfect rotund appearance; and it sometimes, but only rarely, supports itself by resting the point of its bill on the ground. It often yawns when disturbed in the daytime, gaping its mandibles in a very grotesque manner. When provoked it erects the body, and, raising the foot to the breast, strikes downwards with considerable force and rapidity, thus using its sharp and powerful claws as weapons of defence. The story of its striking the ground with its feet to bring the earthworms to the surface, which appears to have gained currency among naturalists, is as fanciful as



THE NORTH ISLAND KIWI.

APTERYX MANTELLI.

THE SOUTH ISLAND KIWI.
APTERYX AUSTRALIS.

PL. XX. p. 45.

the statement of a well-known author that it is capable of 'inflicting a dangerous blow, sometimes even killing a dog!'

"While hunting for its food the bird makes a continual sniffing sound through the nostrils, which are placed at the extremity of the upper mandible. Whether it is guided as much by touch as by smell I cannot safely say; but it appears to me that both senses are called into action. That the sense of touch is highly developed seems quite certain, because the bird, although it may not be audibly sniffing, will always first touch an object with the point of its bill, whether in the act of feeding or surveying the ground; and when shut up in a cage or confined in a room it may be heard, all through the night, tapping softly at the walls. The sniffing sound to which I have referred is only heard when the Kiwi is in the act of feeding or hunting for food; but I have sometimes observed the bird touching the ground close to or immediately round a worm which it had dropped without being able to find it. I have remarked, moreover, that the Kiwi will pick up a worm or piece of meat as readily from the bottom of a vessel filled with water as from the ground, never seizing it, however, till it has first touched it with its bill in the manner described. It is probable that, in addition to a highly-developed olfactory power, there is a delicate nervous sensitiveness in the terminal enlargement of the upper mandible. It is interesting to watch the bird, in a state of freedom, foraging for worms, which constitute its principal food: it moves about with a slow action of the body; and the long flexible bill is driven into the soft ground, generally home to the very root, and is either immediately withdrawn with a worm held at the extreme tip of the mandibles, or it is gently moved to and fro, by an action of the head and neck, the body of the bird being perfectly steady. It is amusing to observe the extreme care and deliberation with which the bird draws the worm from its hiding-place, coaxing it out, as it were, by degrees, instead of pulling roughly or breaking it. On getting the worm fairly out of the ground, it throws up its head with a jerk, and swallows it whole."—Buller.

55. Apteryx australis. *Shaw.*

South Island Kiwi.

(Plate XX.)

Greyish-brown, streaked with black; feathers, soft to the touch.
L., 23; B., 6·5; T., 2·5.
Very variable in size, and slightly so in colour.
Egg.—White; oval; length, 5; breadth, 3·3.
Hab.—South Island.

"In the South-Island Kiwi the feathers of the upper parts are soft and yielding when stroked against the grain, whereas in the North-Island bird (*Apteryx mantelli*), owing to a peculiarity in the structure of the shaft, they have stiffened points, and are harsh and prickly to the touch. This character (apart from a slight difference in the colour of the plumage) is constant in all the specimens I have examined; and I have no hesitation in giving it a specific value, adopting at the same time the distinctive names originally proposed by Mr. Bartlett. In this course I am supported by the unanimous opinion of several of the best ornithologists in England, to whom I have submitted specimens for examination."—Buller.

56. Apteryx oweni. *Gould.*

Grey Kiwi.

(Plate XXI.)

Grey spotted with yellowish-white; feathers, rather harsh to the touch.
L., 19; B., 4·25; T., 2·.
Very variable in size, generally small.
Egg.—White; oval; length, 4·35; breadth, 2·6.
Hab.—Both Islands.

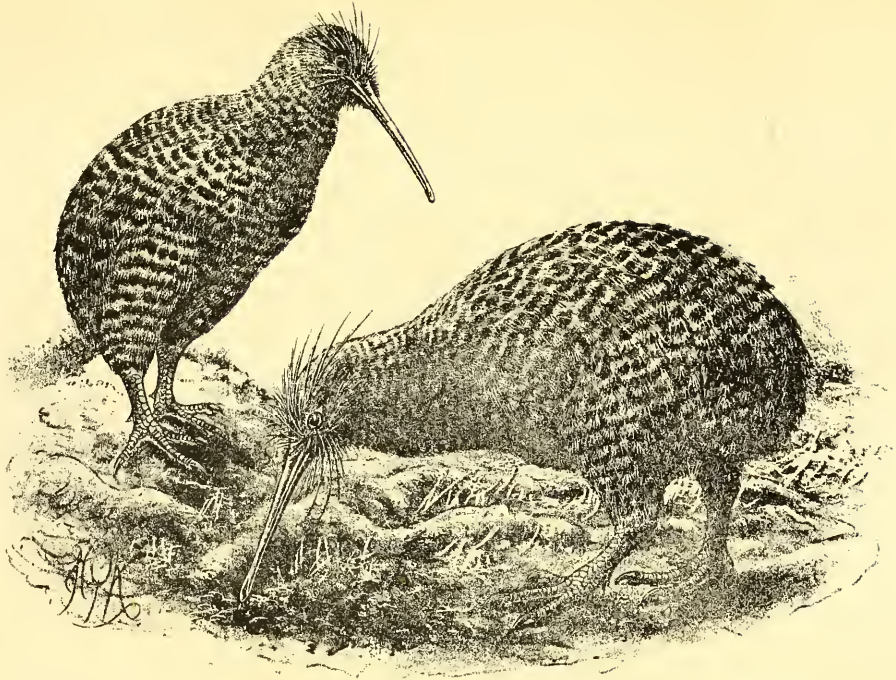
"It frequents the woods, and, being (like its congeners) nocturnal in its habits, must be sought for in prostrate hollow trunks, natural holes or caverns among the roots of the large forest-trees, and clefts or fissures in the rocks. It breeds in these localities; and Dr. Haast informs me that he has sometimes taken its nest from under a dense tussock or from the cavity formed by an overhanging stone on the slope of a wooded hill."—Buller.

57. Apteryx haasti. *Potts.*

Roaroa. Kiwi-karuai.

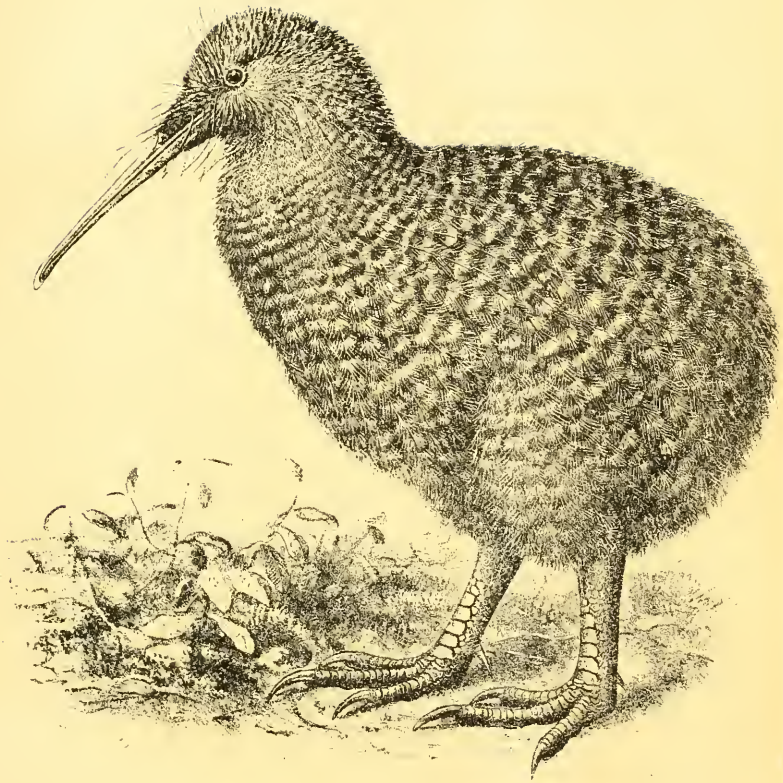
(Plate XXII.)

Grey, spotted with reddish-white; feathers, soft to the touch.
L., 25; B., 5·75; T., 2·7.
Hab.—South Island, in alpine regions.
Note.—The plate illustrating this species is copied from the drawing by Keulemans, in Rowley's "Ornithological Miscellany."



THE GREY KIWI.

APTERYX OWENI.



THE ROAROA.

APTERYX HAASTII.

PL. XXII. *p.* 46.

ORDER VII. GRALLÆ: WADERS.

Lower portion of tibiæ, naked; tarsi, lengthened and slender.

CHARADRIADÆ. Plovers.

Bill, short; tip, strong and swollen; hind toe, either absent or small and tender.

Charadrius. *L.*

Both mandibles grooved, that on the upper one extending for two-thirds of its length; wings, long and pointed, first quill the longest; hind toe wanting.
Spread over the whole world.

58. Charadrius fulvus. *Gml.*

Eastern Golden Plover.

Above, blackish-brown, spotted with yellow or yellowish-white; below, yellowish-white (winter plumage).
L., 10; W., 6·75; B., 1·1; T., 1·75.
Hab.—Both Islands; Australia, Polynesia, Indian Archipelago, Norfolk Island, Siberia, Kamschatka, South Africa.

59. Charadrius obscurus. *Gml.*

Red-breasted Plover. Tuturiwatu.

Above, brown; below, rufous; forehead, chin, and vent, white. In the winter the under-parts are pure white, with a band of brown on the breast.
L., 10; W., 6·5; B., 1·4; T., 1·7.
Egg.—Brownish-yellow, spotted and blotched with black; ovoid; length, 1·75; breadth, 1·25.
Hab.—Both Islands.

"This fine species, although nowhere very plentiful, is dispersed along the whole of our shores, frequenting the ocean-beaches and the sand flats at the mouths of all our tidal rivers. It moreover inhabits the interior, and appears to affect very high altitudes. Dr. Haast has sent me specimens obtained by him far up in the Southern Alps; Mr. Enys states that he has met with it at an elevation of nearly 7,000 feet; and Mr. Buchanan informs me that during his ascent of Mount Egmont, in company with Messrs. Richmond and Hursthouse, he discovered a pair of these birds on the slope of the cone at an elevation of at least 6,000 feet. Mr. Travers assures me that he met with it in small flocks on the Spencer Ranges, in the Province of Nelson, at an elevation above the sea of fully 8,000 feet!

"It subsists chiefly on small crustaceans, mollusca, and sand-hoppers, and pursues its prey on foot. When disturbed it rises in the air with a rapid vibration of its wings, and flies in a circle, with an occasional sailing movement, when the wings are motionless and assume the form of a bow."—Buller.

60. Charadrius bicinctus. *Jard.*

DOTTREL. POHOWERA.

Above, greyish-brown; forehead, white, margined above and below with black; a black line from the gape through the eye, down the side of the neck; below, white, with a band of black on the breast, and another of chestnut on the upper abdomen.

L., 7; W., 4·75; B., ·75; T., 1·2.

Egg.—Greenish-white, speckled with black; length, 1·35; breadth, 1; ovoid, rather pointed.

Hab.—Both Islands; Lord Howe's Island.

"This pretty little Dottrel is very common on our shores, and is frequently met with also at a considerable distance inland. It associates in flocks, and is always to be found on the ocean-beach, or on the dry sands and grassy plains in the vicinity of the coast; but I have also observed it on the Onetapu desert, in the interior of the North Island, and it is very commonly met with on the pastures several miles from the sea. It has been recorded from Lord Howe's Island; and Mr. Ronald Gunn states that it is plentifully dispersed along the northern shores of Tasmania; but Mr. Gould saw it only once in Australia, when, as he informs us, considerable numbers visited a common in the neighbourhood of George Town, and appeared to be acting under some migratory impulse; for, after remaining a day or two, they suddenly disappeared. This occurred about the 15th of May, the middle of the Australian winter; and the flights consisted of birds of various ages and in different states of plumage.

"It is more active in its habits than the preceding species, running swiftly over the sands, and stopping at short intervals to bob its head and utter a rather plaintive note. It rises in the air with a very rapid movement of its wings, and usually adopts a circular course, the whole flock wheeling simultaneously and descending to the ground in an oblique direction."—BULLER.

61. Charadrius ruficapillus. *Temm.*

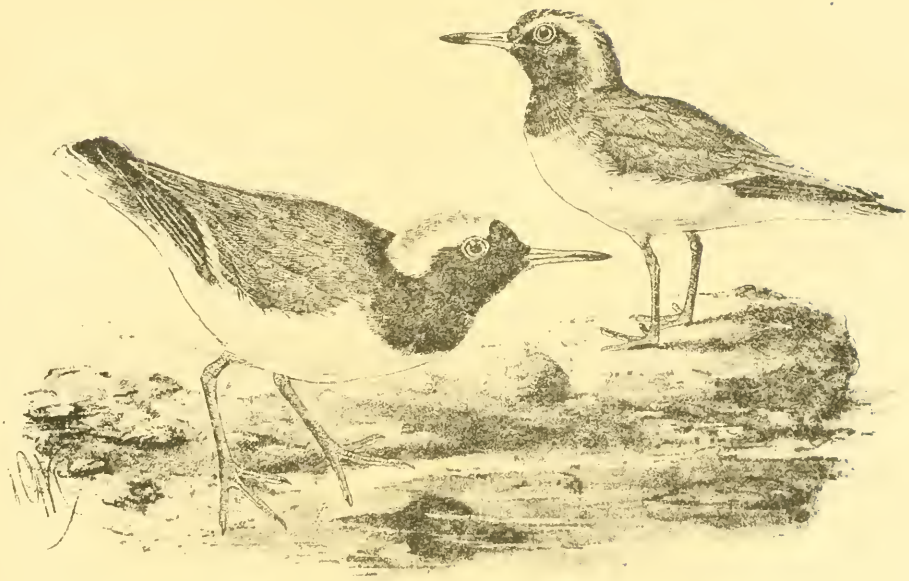
RED-CAPPED DOTTREL.

Above, pale-brown, each feather margined with a lighter tint; forehead, crossed by a broad band of white, which diminishes to a point at posterior angle of the eye; above this a band of black; crown, nape, and back of neck rich rusty-red; a line of black from the gape extends across the eye down the sides of the neck; under-surface white; bill, dark reddish-brown.

L., 5·75; W., 4; B., ·6; T., ·9.

Hab.—Universally dispersed over the Australian sea-shores; one straggler recorded in New Zealand.*

* Transactions N.Z. Institute, Vol. XII., p. 246.



THE SAND PLOVER.
(Adult and Young.)
THINORNIS NOVÆ-ZEALANDIÆ.

THINORNIS. *Gray.*

Bill, rather long; first and second quills nearly equal, and longest; tarsi, not longer than the middle toe; hind toe wanting.
New Zealand; Auckland Islands.

62. Thinornis novæ-zealandiæ. *Gml.*

SAND-PLOVER. KUKURUATU.

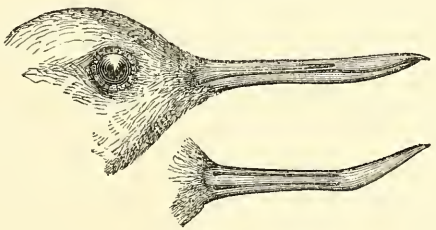
(Plate XXIII.)

Above, greyish-brown, with the forehead, cheeks, throat, and a ring round the nape, black; below, white; bill, orange, with a black tip.
L., 8; W., 4·75; B., 1; T., ·9; middle toe, ·75.
Hab.—Both Islands.

"There can be no doubt, I think, that the so-called *Thinornis rossii*, of which there is a single specimen in the British Museum, brought by the Antarctic Expedition from Auckland Island, is the young of the present species; and I have given a figure of it in that character."—BULLER.

ANARHYNCHUS. *Quoy et Gaim.*

Bill, long, slender, curved to the right; first and second quills equal, and longest; tarsi, longer than middle toe; hind toe wanting.
New Zealand only.



63. Anarhynchus frontalis. *Quoy et Gaim.*

CROOK-BILL PLOVER.

Above, cinerous-grey; below, white, with a black band on the breast; forehead, white; quills, brown, with white shafts.
L., 8·5; W., 5; B., 1·4; T., 1·1.
Egg.—Ovoid, pointed; greenish-grey, minutely speckled all over with dark-brown; length, 1·4; breadth, 1.
Hab.—Both Islands.

"The horny point of the bill of this bird, from its peculiar form, is sufficiently strong to be used for thrusting between and under stones and pebbles. The flexibility of the upper mandible derived from the long grooves and flattened form (extending to nearly half its length) tends materially to assist the bird in fitting its curved bill close to a stone, and thus aids it in searching or fossicking around or beneath the shingle for its food, while at the same time the closed

mandibles would form a tube through which water and insects could be drawn up, as water is sucked up by a syringe. As the flexure of the bill is lateral, the bird is enabled to follow up retreating insects by making the circuit of a water-worn stone with far greater ease than if it had been furnished with the straight beak of the Plover, or the long flexible scoop of the Avocet. The inspection of these specimens must clear away any little cloud of doubt that might remain on the minds of persons unfamiliar with the bird, and convince them that this singular form of bill, so far from being an accidental deformity, is a beautiful provision of Nature, which confers on a Plover-like bird the advantage of being able to secure a share of its food from sources whence it would be otherwise unattainable."—Potts.

"But there is another feature in the natural history of this species that is deserving of special notice. As already described, the fully adult bird is adorned with a black pectoral band, which, in the male, measures ·75 of an inch in its widest part. Now it is a very curious circumstance that this band is far more conspicuous on the right-hand side, where, owing to the bird's peculiar habit of feeding, there is less necessity for concealment by means of protective colouring. This character is constant in all the specimens that I have examined, although in a variable degree, the black band being generally about one third narrower and of a less decided colour on the left side of the breast, from which we may, I think, reasonably infer that the law of natural selection has operated to lessen the colouring on the side of the bird more exposed to Hawks and other enemies whilst the *Anarhyncus* is hunting for its daily food. There can be no doubt that a protective advantage of this sort, however slight in itself, would have an appreciable effect on the survival of the fittest, and that, allowing sufficient time for this modification of character to develop itself, the species would at length, under certain conditions of existence, lose the black band altogether on the left-hand side."—Buller.

Strepsilas. *Illiger.*

Bill, not longer than the head, lateral margin of both mandibles turned upwards; first quill, longest; tarsi, as long as the middle toe; hind toe present.

All parts of the world.

64. Strepsilas interpres. *L.*

Turnstone.

Above, blackish-brown; throat, abdomen, and over the tail, white; breast, brownish-black; tail, white, with a broad brown bar near the tip; bill, black; legs, red; shafts of the quills white (winter plumage).

L., 8·75; W., 5·75; B., 1; T., 1.

Egg.—Greyish-olive, with brown spots (Temminck).

Hab.—Canterbury Province. Found all over the world.

Hæmatopus. *L.*

Bill, longer than the head, rather concave upwards, much compressed at the tip; first quill the longest; tarsi, longer than the middle toe.

The whole world.

65. Hæmatopus longirostris. *Vieill.*

Pied Oyster-catcher. Red-bill. Torea.

Above, greenish-black; below, and over the tail, white; bill and legs, crimson.

L., 19·5; W., 11; B., 3·78; T., 2.

Egg.—Pale yellow-brown, spotted and blotched with brownish-black; length, 2·25; breadth, 1·6.

Hab.—Both Islands; Australia, New Guinea, India, China.

"Like its European prototype, it subsists on small mollusks and crustaceans, for securing which its long wedge-shaped mandibles are peculiarly adapted. Notwithstanding its ungainly form, the strongly-contrasted black and white of its plumage and the bright red of its bill and feet render it an attractive object on the smooth sandy beach, where it may be observed sedately reposing on one leg, or nimbly running to and fro in search of its prey left exposed on the beach by the receding tide. During the nuptial season, it is curious to watch the male bird paying his addresses to the mate of his choice; elevating his back and lowering his bill till it nearly touches the ground, he struts or runs round her with a loud quivering note, no doubt expressive of his undying attachment; and, when there are two rival males thus performing in concentric circles before the same shrine of devotion, it is amusing to observe with what perfect indifference the object of this demonstration appears to receive the attentions of her rival suitors. When once, however, her affections are secured, she appears to remain faithful to her mate, and the pair continue together, if not for life, certainly long after the breeding-season, with all its cares, has passed by. Even when consorting together, as they frequently do, in small flocks, each pair seems to maintain its individuality; and when at rest on the sands the party may be seen disposed in couples, at short distances apart from the rest."—Buller.

66. Hæmatopus unicolor. *Forst.*

Black Oyster-catcher. Red-bill. Torea.

Greenish-black; bill and legs, crimson.

L., 18·5; W., 10·5; B., 4·5; T., 3.

Hab.—Both Islands.

"This species, although far more abundant in New Zealand than the Pied Oyster-catcher, appears to have a more confined range, for it has never yet been recorded elsewhere. Its habits are the same, with the exception that it is less gregarious, being met with generally either singly or in pairs; and its eggs are quite undistinguishable from those of the former species."—Buller.

ARDEIDÆ. Herons.

Bill, long, strong, and acute; wings, rounded; tail, short; tarsi, long, rather slender; hind toe on the same level as the others.

Ardea. *L.*

Bill, straight, first quill nearly as long as the second and third; tarsi, longer than the middle toe; hind toe, long; claw of middle toe, serrated.
The whole world.

67. Ardea alba. *L.*

White Heron. Kotuku.

Pure white; skin on the side of the head, greenish; bill, yellow; legs, black; in the breeding season both sexes are ornamented with long white dorsal filamentous plumes.
L., 40; W., 16; B., 6; T., 6.
Variable in size.
Hab.—Both Islands; Chatham Islands, Europe, Asia, Africa, Australia, and North America.

"The White Heron occurs so sparingly in most parts of New Zealand that 'rare as the Kotuku' has passed into a proverb among the Maoris; while in the North Island it is said to occur only once in a life-time (He Kotuku rerenga tahi).

"Subsisting almost entirely on eels and small freshwater fish, it frequents the sedgy shores of lagoons and the banks of tidal streams; but it sometimes resorts also to the open sea-beach, where I have myself shot it.

"It is very interesting to watch this stately bird stalking about in its haunts, or fishing in the shallow water, its snow-white plumage rendering it a very conspicuous object. I have always found it very shy and difficult to approach, the slightest sound exciting its suspicion and making it take wing. It flies high and in wide circles, the wings performing slow and regular flappings, the head being drawn in upon the shoulders, and the legs trailing behind."—Buller.

68. Ardea novæ-hollandiæ. *Lath.*

White-fronted Heron. Matuku-moana.

(Plate XXIV.)

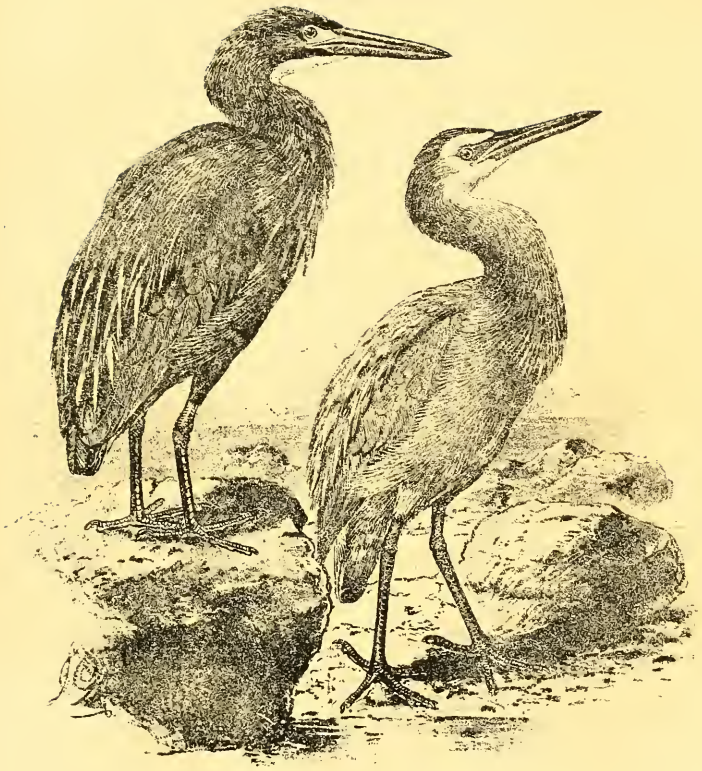
Bluish-grey; throat, forehead, and over the eye, white; breast, tinged with pink.
L., 25; W., 12·5; B., 4; T., 3·5.
Egg.—Pale bluish-green; length, 1·85; breadth, 1·25. (Gould.)
Hab.—Both Islands; Australia, Tasmania.

69. Ardea sacra. *Gml.*

Blue Heron. Matuku.

(Plate XXIV.)

Slate-grey; brownish on the wing-coverts; chin and throat, white; legs and feet, yellowish-green.
L., 22·5; W., 10·5; B., 3·75; T., 3·5.
Egg.—Pale greenish-blue; length, 1·9; breadth, 1·4.
Hab.—Both Islands; Chatham Islands, Polynesia, India, Japan.



THE BLUE HERON.
ARDEA SACRA.

THE WHITE-FRONTED HERON.
ARDEA NOVÆ-HOLLANDIÆ.

"The Blue Heron frequents the rocks under the sea-cliffs, and the shores of the sheltered bays and estuaries, where it may be observed moving actively about in search of its food, which consists of small crabs and shell mollusks; or perched on some prominent point of rock, where its constant vigilance renders it difficult of approach except under cover. When disturbed it rises slowly and rather awkwardly, and makes a detour seaward, returning to a neighbouring station on the rocks, or, if alarmed, wings its way slowly across the bay or to some more remote part of the coast."—Buller.

70. Ardea maculata. *Lath.*

Little Bittern. Kaoriki.

Back and quills, dark-brown; top of the head, greenish-black; front of the neck, buff, passing into chestnut towards the back of the neck; a stripe of chestnut streaked with brown down the front of the neck; wing-coverts, buff, striped with dark brown; abdomen, buffy-white, streaked with grey. In the young the back is varied with rufous, and some of the primaries and secondaries are tipped with the same colour.

L., 14; W., 6·2; B., 3; T., 2.

Hab.—South Island; Australia, Natal.

Very few specimens have been obtained.

71. Ardea pœciloptila. *Wagl.*

Bittern. Matuku-hurepo.

Blackish-brown, varied with buff.

L., 26; W., 12·25; B., 3·25; T., 3·75.

Egg.—Brownish-olive; length, 2·17; breadth, 1·5.

Hab.—Both Islands; Chatham Islands, Australia, Tasmania.

"The Common Bittern is very generally distributed over the country, in places suited to its habits of life, such as raupo swamps, sedgy lagoons, and those 'blind creeks,' covered over with a growth of reeds and tangle, which are so numerous in all the low districts. In some localities it is comparatively abundant—for example, along the whole extent of swampy flats lying between Waikanae and Rangitikei, on the west coast of the Wellington Province, where I have obtained half-a-dozen in the course of a single afternoon. It is likewise met with in all parts of the Australian continent, although very few specimens appear to have been sent to Europe; and Captain Sturt reports that he found it very plentiful in the marshes of the interior. It is said to occur also in the Chatham Islands; and there is reason to believe that its range extends to Polynesia. . . . .

"It is a true Bittern in all its habits, being, in fact, the southern representative of the *Botaurus stellaris* of Europe. It appears to love a solitary life, being always met with singly; it remains concealed during the heat of the day, and at eventide startles the ear with its four loud booming notes, slowly repeated, and resembling the distant roar of an angry bull. It subsists on mice, lizards, eels, and fresh-

water fish, of various kinds; from the gullet of one that I had shot I extracted two headless eels, each measuring 16 inches in length, from which some idea may be formed of the capacity of a Bittern's stomach!

"It is interesting to steal up, under cover, and watch this Bittern alternately feeding and reposing in its sedgy haunts. When in a quiescent posture the body is nearly erect, the head thrown back and resting on the shoulders, with the beak pointed upwards, and the contracted neck forming a broad curve with the closed ruff depending, the attitude altogether being rather grotesque. The instant, however, any sound causes it alarm, the whole character of the bird is changed: the neck is stretched to its full length, and every movement betokens caution and vigilance; unless immediately reassured, it spreads its broad wings and raises itself into the air in a rather awkward manner, with the legs dangling down, but gradually raised to a level with the tail; the flight then assumes a steady course, often in a broad semicircle, and is maintained by slow and regular flappings. If unmolested, it may be observed stalking knee-deep in the water in search of food, with its neck inclined forward, raising its foot high at every step as if deliberately measuring the ground."—Buller.

Nycticorax. *Stephens.*

Bill, rather longer than the head, slightly arched; tarsi, as long as the middle toe.
All parts of the world.

72. Nycticorax caledonicus. *Lath.*

Nankeen Night-Heron.

Above, pale-rufous; below, white; top of the head, black, with two long white plumes.
L., 21·5; W., 11·5; B., 3·75; T., 2·37.
Egg.—Pale green; length, 2·6; breadth, 1·5. (Gould.)
Hab.—Only an occasional visitant to New Zealand; Australia, New Caledonia.

Platalea. *Linn.*

Bill, lengthened, much depressed, and broadly dilated at the tip, which is spatula-formed; wings, long, the second quill longest; toes, long, with the anterior toes much united at their base by a membrane.

73. Platalea regia. *Gould.*

Royal Spoonbill.

Pure white; bill, face, legs, and feet, black; on the crown of the head and over each eye a triangular mark of orange; irides, red.
L., 29; W., 15; B., 8·5; T., 5·5.
Hab.—Eastern and Northern Coast of Australia. A single occurrence in New Zealand.*

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* Transactions N.Z. Institute, Vol. IX., p. 337.

SCOLOPACIDÆ.

Bill, long, slender, grooved to the tip; wings, long and pointed; hind toe, short or wanting.

Limnocinclus. *Gould.*

Bill more or less strong, with the culmen straight and the sides compressed; wings reaching beyond the end of tail and pointed, with the first quill the longest; tail, moderate and nearly even; toes, long and slender, united at the base by a membrane.

74. Limnocinclus acuminatus. *Horsf.*

Sandpiper.

Crown of head and lores, rufous, each feather centred with brown; upper surface, brownish-grey, each feather centred with brown, which fades into grey; wing-feathers, dark brown with white shafts; line over eye, and throat, white; fore-neck, fulvous-grey speckled with brown; general under-surface, fulvous-white; bill, brown; legs and feet, olive.

L., 7; W., 5·15; B., 1·05; T., 1·1.

Hab.—South Island; Australia and Tasmania.

Limosa. *Briss.*

Bill, inclined upwards towards the tip; first quill the longest; tarsi, longer than the middle toe; outer toe united to the middle as far as the first joint by a membrane; hind toe, rather long.

Spread over the whole world.

75. Limosa baueri. *Naum.*

Godwit. Kuaka.

Above, greyish-brown; over the tail white, barred with brown; tail, white, barred with greyish-brown; throat, brownish-white, streaked with darker; breast, rufous in spring, white in the autumn; abdomen, white; shafts of quills, white.

L., 14·5–17·75; W., 9–9·25; B., 2·9–4·4; T., 2·25.

Hab.—Both Islands; Australia, Polynesia, China, Siberia.

"This Godwit is the Eastern representative of the European *Limosa lapponica*, to which it bears a close resemblance; and, like that species, it has a very extensive geographical range. Both of them are alike migratory in their respective hemispheres; and while the other species breeds in the high northern latitudes of Europe and retires in winter to North-west and East Africa, our bird spends a portion of the year in Siberia, and visits, in the course of its annual migration, the islands of the Indian archipelago, Polynesia, Australia, and New Zealand. Von Middendorff, who met with these birds in great numbers in Northern Siberia (74–75° N. lat.), states that they appeared there on the 3rd June, and left again in the beginning of August. In the months of September and April, Swinhoe observed migratory flocks on the coast of Formosa, and during the winter months he met with this species still further south. Von Middendorff found it also in summer on the south coast of the Sea of Ochotsk, although it did not appear to breed there. It has likewise been observed in China, Japan, Java, Celebes, Timor, Norfolk Island,

and the New Hebrides, and its range doubtless extends much further; but it has never yet been met with in India, this being probably too far west of its annual course. . . . .

"The habits of this species are in no respect different from those of its European ally. As already stated, it is migratory, and towards the end of March or beginning of April large flocks may be seen at the far north taking their departure from our country. Rising from the beach in a long line and with much clamour, they form into a broad semicircle, and, mounting high in the air, generally take a course due north: sometimes they rise in a confused manner, and, after circling about at a considerable height in the air, return to the beach to reform, as it were, their ranks, and then make a fresh start on their distant pilgrimage. The departure from any fixed locality usually begins on almost the exact date year after year; and for a week or ten days after the migration has commenced fresh parties are constantly on the wing, the flight generally taking place about sunset, and sometimes after dark. The flocks begin to reappear at the north early in November, and then rapidly disperse along the coast."—Buller.

Numenius. *Latham.*

Bill, long, slender, and curved from the base; nostrils, basal, lateral, placed in a groove and covered by a membrane; wings, long and pointed, with first quill longest; tarsi, longer than middle toe, slender, and covered in front with narrow transverse scales; hind toe, long, slender, and partly resting on the ground.

76. Numenius cyanopus. *Vieill.*

Australian Curlew.

Crown of head and back of neck blackish-brown, each feather margined with buff; back and wings, blackish-brown, the feathers margined with buff and greyish-white; rump and tail brown, the former barred with grey and the latter with dark brown; sides of face, throat, and under-surface pale buff, with a line of brown down the centre of each feather; bill, flesh-colour, becoming brown at the tip; legs, lead-colour.

L., 29; W., 12; B., 8; T., 3·5.

Hab.—Australia, Tasmania, and the islands of Bass's Straits. Several occurrences in New Zealand.

77. Numenius uropygialis. *Gould.*

Australian Whimbrel.

Crown of head, brown, with light stripe down each feather; lores, and line behind eye, brown; line over eye, neck, and breast, buffy-white with brown line down each feather; upper surface dark olive, feathers spotted on their margins with buff, lighter on the wing-coverts; rump and upper tail-coverts barred with brown and white; bill, dark horn-colour; feet, greyish-black.

L., 15; W., 8·75; B., 2·4; T., 2·2.

Hab.—Australia and Tasmania. A single occurrence in New Zealand recorded.*

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* Transactions N.Z. Institute, Vol. VII., p. 224.

Recurvirostra. *L.*

Bill, long and slender, curved upwards; tarsi, much longer than middle toe; toes united by an indented web; hind toe, very short.

All parts of the world.

78. Recurvirostra rubricollis. *Temm.*

Avocet.

Head, and upper part of the neck, chestnut; middle of wings, quills, and shoulders, black, remainder white; bill, black; legs, blue; tail, pale ash.

L., 17·5; W., 9; B., 3·75; T., 3·5.

Hab.—South Island; Australia.

Himantopus. *Briss.*

Bill, much longer than the head, slender, straight; tarsi, very long and slender; toes, united at the base by a small membrane; hind toe wanting.

All parts of the world.

79. Himantopus leucocephalus. *Gould.*

Pied Stilt. Tutumata.

Back of the neck, back and wings, greenish-black; tail, ash; remainder, including a band over the shoulders, white; bill, black; legs, red. In the young, the top of the head and the back of the neck are grey, mixed with white.

L., 15; W., 9·6; B., 2·8; T., 4.

Egg.—Pyriform; pale yellow-brown, spotted and blotched with umber and black, the black spots running together, and forming large patches on the thick end; length, 1·5; breadth, 1·23. (Ramsay.)

Hab.—Both Islands; Australia.

"Notwithstanding the extraordinary length of its legs, this bird is most graceful in all its movements; and it is a pretty sight to watch a flock of them on the edges of a lagoon, stalking about in the shallow water in search of their food, which consists of aquatic insects and small mollusca, and displaying their well-balanced bodies in a variety of artistic attitudes. When on the wing, the legs are trailed behind, with a slight swaying motion as if to preserve the equipoise; and the bird utters a sharp, quickly-repeated note, like the yelping of a small cur."—Buller.

80. Himantopus novæ-zealandiæ. *Gould.*

Black Stilt. Kaki.

Adult in summer.—Head, neck, and all the under-surface brownish-black, inclining to slaty-grey on the face and towards the base of lower mandible; back, rump, and upper surface of wings and tail, glossy greenish-black; irides and eyelids crimson; legs and feet pinky-red, the claws black.

Adult in winter.—Crown and sides of the head, hind part of neck, and the whole of the abdomen, sooty-black; back, wings, and tail, glossy greenish-black; the rest of the plumage pure white.

Young.—Forehead, sides of the head, fore-part and sides of the neck, and all the under-parts, pure white; crown of the head, mantle, and scapulars blackish-brown, each feather margined at the tip with fulvous; hind part of the neck and between the shoulders dark grey, mottled with paler grey; back and rump white; upper and lower surface of wings, as well as the axillary plumes, black; the upper wing-coverts and the long inner secondaries margined with fulvous, and the primaries tipped with light grey; tail-feathers greyish-brown, the outer ones white on their inner webs, with an apical spot of brown.

L., 15; W., 10; B., 2·8; T., 3·75.
Egg.—Yellowish-brown, profusely marked with dark brown; length, 1·85; breadth, 1·25.
Hab.—Both Islands.

"It may readily be distinguished from the preceding species by its darker plumage, and by its somewhat shorter legs. Its habits, however, are similar, excepting that it is less gregarious, associating in pairs rather than flocks, while it appears to prefer the dry shingle-beds to the lagoons and marshy grounds which constitute the favourite feeding-resorts of the other species. It is, moreover, a much rarer bird, although it is generally to be found in all the river-courses of the Wellington Province, and further south."—BULLER.

81. Himantopus albicollis. *Buller.*

WHITE-NECKED STILT.

Entire head and neck, with the breast and under-parts, pure white; rump and upper tail-coverts also white; back, scapulars, and upper surface of wings and tail, glossy-black, the inferior primaries and the secondaries tipped with white; under-surface of wings, black.
L., 14·25; W., 9·25; B., 2·9; T., 3·75.
Hab.—Both Islands.

TRINGA. *L.*

Bill, rather longer than the head, straight, rather dilated at the tip; toes, margined on the sides by a membrane; hind toe, small.
All parts of the world.

82. Tringa canutus. *L.*

KNOT.

Above, greyish-brown, slightly streaked with brown; below, white, spotted with brown on the breast and throat; upper tail-coverts, white, with circular bars of blackish-brown; quills, blackish-brown, from the fifth margined on the outer web with white; tail, greyish-brown; shafts of the quills and tail-feathers white. (Winter plumage.)
L., 10·5; W., 6·25; B., 1·25; T., 1·17.
Hab.—Both Islands; Australia, Cape of Good Hope, Europe, North America.

GALLINAGO. *Leach.*

Bill, long; first and second quills, equal; tarsi, shorter than the middle toe; hind toe elevated with a long claw.
All parts of the world.

83. Gallinago aucklandica. *Gray.*

NATIVE SNIPE.

Above, fulvous, marked with black; below, fulvous-white, with brown markings on the breast; a brown stripe from the nostrils under the eye to the back of the head, and another, in an oblique direction, on each cheek.
L., 9; W., 4·5; B., 2·3; T., 1.
Hab.—Auckland Islands.

84. Gallinago pusilla. *Buller.*

LITTLE SNIPE.

Above, rufous-brown, spotted with black and fulvous; below, brownish-white, spotted on the breast with brown; a brownish-white longitudinal line on the top of the head, and a brown line from the nostrils to the eye.

L., 8; W., 4; B., 1·7; T., ·75.

Hab.—Little Barrier Island, and Chatham Islands.

"Judging from the measurements of specimens recently obtained in the Chatham Islands (cf. Finsch, I.F.O. 1874, p. 197), I am inclined to regard *G. pusilla* as a smaller species than *G. Aucklandica*, which from its constantly lesser dimensions may well be kept distinct."—SHARPE.

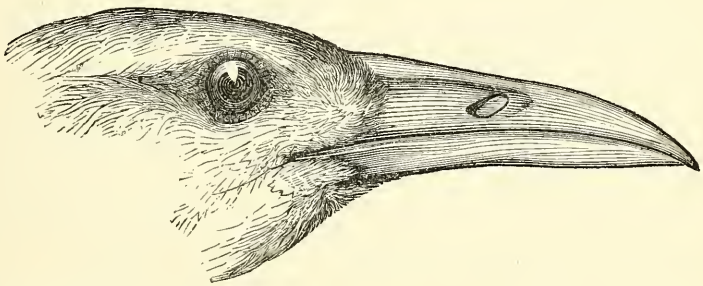
RALLIDÆ.

Bill, rather long, curved at the apex; wings, moderate, or short, rounded; toes, long; claws, short.

OCYDROMUS. *Wagl.*

Bill, rather long and strong, slightly arched; wings, very short, secondaries and coverts lengthened; tail, soft; tarsi, strong, shorter than the middle toe; hind toe, short; wings armed with a spur.

New Caledonia, Lord Howe's Island.



85. Ocydromus earli. *Gray.*

NORTHERN WOODHEN. WEKA.

(Plate XXV.)

Brownish-rufous, streaked with brownish-black; chin, cheeks, throat, and abdomen, grey; breast, tinged with rufous; quills, black, margined on the outer and irregularly banded on the inner web with reddish-fulvous.

L., 19; W., 7; B., 1·75; T., 2·25.

Hab.—North Island.

"The Woodhen is furnished with ample wings, but they are so feebly developed as to render the bird quite incapable of flight. The quill-feathers have broad webs, but are soft and flexible, while the long inner secondaries take the form of a loose overlapping mantle. The legs, on the other hand, are very strongly developed, and the bird is, in some measure, compensated for its disability

of wing by being able to run almost with the swiftness of a rat. Its anterior extremities, although useless for the ordinary purposes of flight, appear to be of some assistance to the bird when running, as they are briskly fluttered, apparently for the purpose of steadying the body. Like most other Rails, its wings are armed below the carpal joint with a sharp spur, the object of which, unless as a means of defence, it is not easy to divine. Even in very young birds it is strong and sharp, and at maturity attains a length of ·25 of an inch. I have observed that when two of these birds are fighting they often buffet each other with their wings; and I have frequently myself been made aware of the existence of this spur on seizing the bird with the hand. As, however, in the case of the smaller Rails the spur is too diminutive to be at all effective as a weapon of defence, it may serve some other useful end in the economy of the bird, which has hitherto escaped discovery. . . . .

"The New Zealand *Ocydromus* and the Dodo of the Mauritius are the only two known forms (excepting, of course, the *Struthiones*) in which the angle formed by the axes of the coracoid and scapula is greater than a right angle—a feature of such importance that Professor Huxley has adopted it as one of the distinguishing characters in his proposed scheme for the classification of birds, under the two divisions of *Carinatæ* and *Ratitæ*.

"The Woodhen is semi-nocturnal in its habits, and during the day usually remains concealed in the thick fern or scrub which covers its haunts, or takes refuge in a hollow log or other natural cavity. Sometimes, however, it excavates a home for itself underground, the work being performed entirely with the bill and with great rapidity, as I have frequently had an opportunity of observing. These subterranean burrows are often of considerable length, and not only serve as a diurnal retreat, but furnish also a convenient breeding-place."—Buller.

86. Ocydromus australis. *Sparrm.*

Southern Woodhen. Weka.

(Plate XXV.)

Yellowish-olivaceous, streaked with brownish-black; chin, cheeks, throat, and abdomen, grey; breast, tinged with olivaceous; quills, black banded with bright ferruginous.

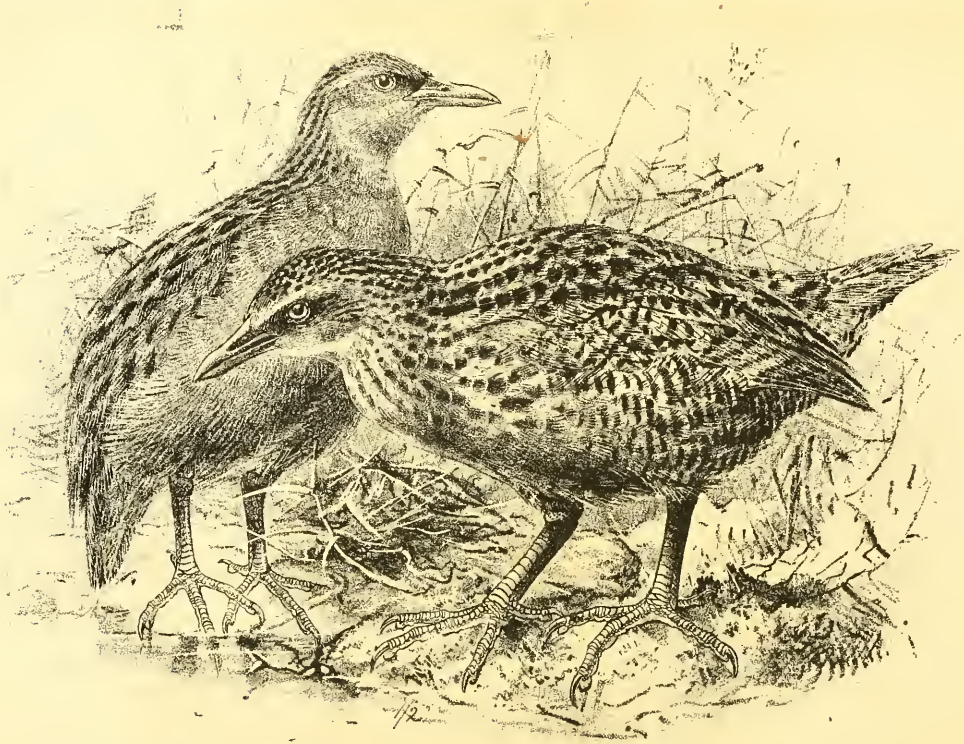
Note.—Varies much in colour, sometimes olivaceous, sometimes fawn-coloured. Albino varieties also occur.

L., 21; W., 7·75; B., 2·3; T., 2·2.

Egg.—Pinkish-white, with reddish and violet marks sparingly distributed over the surface; length, 2·85; breadth, 1·65.

Hab.—South Island.

"It is generally distributed over the Canterbury Province, and I do not know any place except near the towns where its loud and



THE NORTH ISLAND WOOD-HEN.
OCYDROMUS EARLI.

THE SOUTH ISLAND WOOD-HEN.
OCYDROMUS AUSTRALIS.

PL. XXV. fig. 59, 60.

rather melancholy call is not more or less frequently heard. Its thievish propensities render it sometimes very troublesome. I have known it carry off a meerschaum pipe, spoons, pannikins, boxes of matches; and on one occasion, in Alford Forest, it actually stole a watch from a bushman's hut. But the Weka, unlike the Jackdaw, does not appear to care for a secret hiding-place in which to deposit its pilferings, and the stolen watch was fortunately recovered, although only by accident. The loud screaming of this bird is most frequently heard at night and before rain. The young I have seen early in October. The nest is found in a variety of situations, such as in a tuft of *Celmisia*, under a grass tussock, or sometimes in a thicket of young plants on the outskirts of the bush."—Potts.

87. Ocydromus fuscus. *Dubus.*

Black Woodhen.

Black, each feather margined with reddish-brown; throat, sides of the face, and abdomen, dark grey; quills, brownish-black, with a few spots of reddish-brown on the inner webs.

L., 20; W., 7·5; B., 2·25; T., 2·5.

Hab.—West Coast of South Island.

88. Ocydromus brachypterus. *Lafresnaye.*

General plumage, a yellowish-buff colour, obscurely marked and spotted with brown; quills, dark rufous-brown barred with black; the sides of the body and flanks more or less banded.

L., 23; W., 7·8; B., 2·2; T., 2·3.

Hab.—South Island.

Cabalus. *Hutton.*

Bill, longer than the head, moderately slender and slightly curved, compressed in the middle and slightly expanding towards the tip; nostrils placed in a membranous groove which extends beyond the middle of the bill, openings exposed, oval, near the middle of the groove. Wings, very short, rounded; quills, soft, the outer webs as soft as the inner, fourth and fifth the longest, first nearly as long as the second; a short compressed claw at the end of the thumb. Tail, very short and soft, hidden by the coverts. Tarsi, moderate, shorter than the middle toe, flattened in front, and covered with transverse scales; toes, long and slender, inner nearly as long as the outer; hind toe, short, very slender, and placed on the inner side of the tarsus; claws, short, compressed, blunt.

89. Cabalus modestus. *Hutton.*

Olivaceous-brown; bases of the feathers plumbeous; feathers of the breast slightly tipped with pale fulvous, those of the abdomen and flanks with two narrow bars of the same colour; throat, dark grey, each feather slightly tipped with brown; quills, brown, the first three faintly barred with reddish-fulvous; irides, dark brown; legs, dark brown.

Young.—Covered with brownish-black down.

L., 4·5; W., 2·25; B., ·65; T., ·87.

Hab.—Mangare, in the Chatham Island Group.

"*Rallus modestus* is a perfectly good species, and belongs to the Ocydromine group of *Rallidæ*. The existence of so small a form of *Ocydromus* is a very interesting fact."—Prof. Newton.

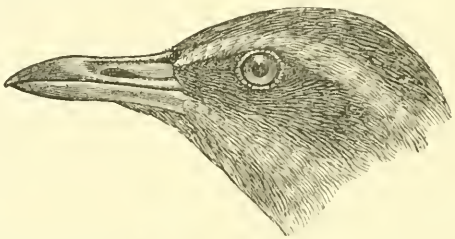
"In his latest article on the Birds of New Zealand Dr. Finsch

believes in *Rallus modestus* of Hutton being a distinct species from *R. dieffenbachii*. I examined the type of Captain Hutton's species, and thoroughly believe it to be the young of the latter Rail. Perhaps Captain Hutton is right in referring this Rail to a genus or sub-genus intermediate between *Rallus* and *Ocydromus;* and I have therefore for the present adopted his genus *Cabalus*."—Sharpe.

Rallus. *L.*

Bill, as long as or longer than the head; wings, short, second and third quills the longest; tail, short, rounded; tarsi, shorter than the middle toe; toes, long, slender, free at the base; hind toe, short.

All parts of the world.



90. Rallus philippensis. *Linn.*

Striped Rail. Mohopererū.

(Plate XXVI.)

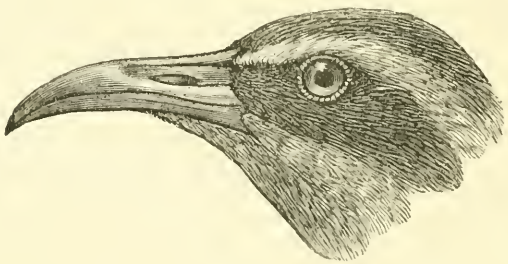
Above, brownish-olive, spotted with white; breast, abdomen, and sides, white, barred with black, and with an irregular band of buff on the breast; throat, and sides of the face, grey; a line of rufous through the eye to the nape; quills, dark-brown banded with rufous.

L., 12·25; W., 6; B., 1·5; T., 1·5.

Very variable both in colour and dimensions.

Egg.—Cream-colour, spotted with dark and light chestnut and grey; length, 1·5; breadth, 1·2.

Hab.—Both Islands; Australia, Polynesia, Celebes, Philippine Islands.

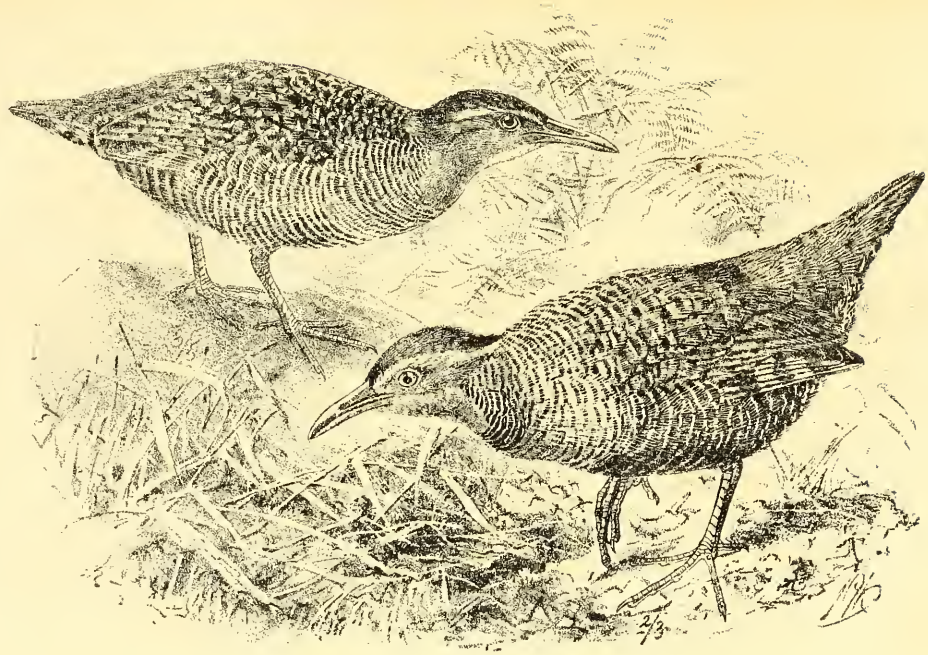


91. Rallus dieffenbachii. *Gray.*

Moeriki.

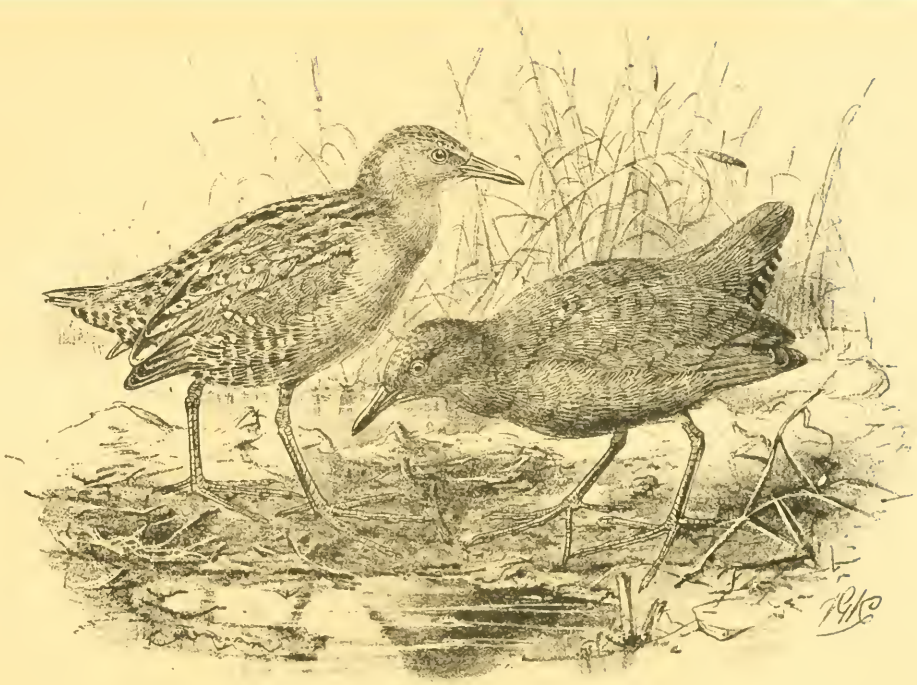
(Plate XXVI.)

Crown and nape, rusty-brown; sides of head and throat, pale ash-grey, the former crossed by a stripe of brown, which changes to chestnut on the ear-coverts, and, extending further, forms a nuchal collar; on the foreneck a zone of black, with rayed lines of white;



THE STRIPED LAND-RAIL.
RALLUS PHILIPPENSIS.

THE CHATHAM ISLAND LAND-RAIL.
RALLUS DIEFFENBACHII.



THE WATER CRAKE.
ORTYGOMETRA AFFINIS.

THE SWAMP CRAKE.
ORTYGOMETRA TABUENSIS.

neck beyond, and the whole of the breast, bright rufous-brown, with narrow transverse bands of black; general upper-surface, fulvous-brown, varied with black, barred and spotted with pale rufous; under-parts black, handsomely fasciated with white and rufous-brown.
L., 12·5; W., 5; B., 1·5; T., 1·5.
Hab.—Chatham Islands. Very rare if not extinct.

92. Rallus brachipus. *Swains.*

Head and sides of neck rufous, striated with black on the crown and nape; upper-surface, black striped with olive; under-surface, slate-grey; the abdomen banded broadly with black and narrowly with white; bill, brownish-red; feet, flesh-colour.
Egg.—Pale olive-colour, blotched all over with reddish and dark brown; length, 1·25; breadth, ·8.
Hab.—Auckland Islands. (Baron A. Von Hügel.)

Ortygometra. *L.*

Like *Rallus*, but the bill shorter than the head.
All parts of the world.

93. Ortygometra affinis. *Gray.*

Water Crake. Koitareke.
(Plate XXVII.)

Above, brown, spotted with white and varied with black; below, light grey; sides, thighs, and abdomen, barred with black and white; legs, feet, and bill, brownish-green.
L., 7·5; W., 3·25; B., ·75; T., 1·1.
Hab.—Both Islands.

"This handsome little Crake is found in both Islands; but it is everywhere extremely rare and difficult to obtain. It frequents the sedgy banks of creeks and rivers, and the reed-covered lagoons near the sea-coast. It swims with great facility, and, like other members of the genus, often eludes pursuit by diving. Its food appears to consist of aquatic insects and small freshwater mollusks." Buller.

94. Ortygometra tabuensis. *Gml.*

Swamp Crake. Putoto.
(Plate XXVII.)

Slate-blue, brownish on the back; under-tail coverts, black banded with white; bill, black; legs and feet, red.
L., 6·5; W., 3·2; B., ·75; T., 1·1.
Hab.—Both Islands; Australia, Tasmania, Polynesia.

"This elegant little Rail has a wide geographical distribution. According to Mr. Gould it is universally spread over the whole of Australia, Tasmania, and the islands in Bass's Strait. It also occurs in the Society, Tonga, and Fiji groups, and probably over the whole extent of the Polynesian archipelago. It is sparingly dispersed with us over both Islands, frequenting wet and swampy localities, and especially the dense beds of raupo (*Typha angustifolia*), which afford it abundant shelter. Its compressed form enables it to thread its way among the close-growing reed-stems with wonderful celerity; and, although its low purring note (resembling that of a brood hen) may

sometimes be heard on every side, it is extremely difficult to obtain a glimpse of the bird. Its body weighs only two ounces; and its attenuated toes are well adapted for traversing the oozy marsh in search of its food, which consists of small freshwater mollusks, insects, seeds of aquatic plants, and the tender blades of various grasses. It seldom takes wing, and then only for a very short distance; but it runs with rapidity, swims very gracefully, and often dives to escape its enemies."—Buller.

Notornis. *Owen.*

Bill, strong, shorter than the head, much deeper than broad, arched, dilated on the forehead; wings very short, rounded; quills, soft, from the third to the seventh equal and longest; tail, soft; tarsi, longer than the middle toe; hind toe, short.
New Zealand and Norfolk Island.

95. Notornis mantelli. *Owen.*

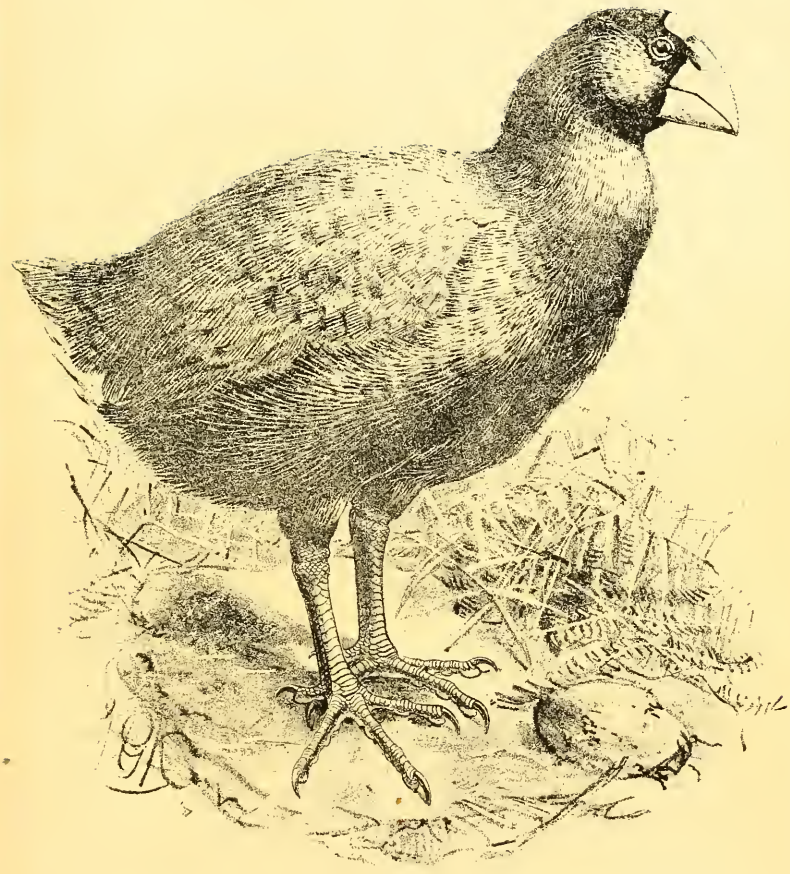
Moho or Takahe.
(Plate XXVIII.)

Dark purplish-blue, shaded with olive-green on the back and wings; under tail-coverts, white; bill and legs, red.
L., 25; W., 8·5; B., 2·12; T., 3·5.
Hab.—South Island.

"Upon a cursory view of this bird it might be mistaken for a gigantic kind of *Porphyrio;* but on an examination of its structure it will be found to be generically distinct. It is allied to *Porphyrio* in the form of its bill and in its general colouring, and to *Tribonyx* in the structure of its feet, while in the feebleness of its wings and the structure of its tail it differs from both."—Gould.

"This bird was taken by some sealers who were pursuing their avocations in Dusky Bay. Perceiving the trail of a large and unknown bird on the snow with which the ground was covered, they followed the footprints till they obtained a sight of the *Notornis,* which their dogs instantly pursued, and after a long chase caught alive in the gully of a sound behind Resolution Island. It ran with great speed, and upon being captured uttered loud screams, and fought and struggled violently; it was kept alive three or four days on board the schooner and then killed, and the body roasted and ate by the crew, each partaking of the dainty, which was declared to be delicious. The beak and legs were of a bright-red colour."—Mantell.

"Mr. Mantell was fortunate enough to secure a second specimen of the *Notornis;* and these examples, the only two known, having been carefully mounted by Mr. Bartlett, now stand side by side in the National Collection of Great Britain, and, like the remains of the Dodo in the adjoining case, daily attract the attention of thousands of eager visitors.



THE TAKAHE.

NOTORNIS MANTELLI.

PL. XXVIII. p. 64.

"Although no examples of the *Notornis* have since been obtained, it does not necessarily follow that the species is absolutely extinct. The recluse habits of such a bird, as already pointed out by Mr. Gould, would account for its hitherto escaping notice in the only partially explored portions of the country."—BULLER.

Since the above was written a third example of the *Notornis* has been obtained, having been lately captured by a party of rabbit-hunters with dogs at a place known as "Bare-patch," between the Marnia and Upokororo Rivers, on the plains eastward of Te Anau Lake. The first of Mr. Mantell's specimens, mentioned above, was caught by a party of Maori sealers at Duck Cove, in Resolution Island, Dusky Sound; and the second on Secretary Island, opposite to Deas Cove, Thompson Sound. Thus the three known examples have been taken from localities ninety miles apart, and over an interval of thirty-five years, proving pretty conclusively that the species still survives in the remote parts of the country. It may be mentioned that Dr. Hector—who supplies the above information from personal inquiries among the Maoris at Riverton in 1863—was assured by the Natives that the bird was even then plentiful at the head of the north-west arm of Te Anau Lake, and they indicated a particular locality near a small lake in the valley leading to Bligh Sound.

The interest attaching to our bird has been enhanced by the discovery that the White Swamp Hen of Norfolk Island is likewise a true *Notornis*, thus widening considerably the ancient range of the genus, and furnishing an important fact in geographic distribution.

PORPHYRIO. *Briss.*

Bill, short, elevated at the base, which is flat and dilated on the forehead; second, third, and fourth quills nearly equal and longest; tail, short, rounded; tarsi, shorter than the middle toe; toes, very long, free at the base; hind toe, long.

Warm and temperate climates all over the world.

96. Porphyrio melanotus. *Temm.*

SWAMP-HEN. PUKEKO.

Above, deep black; breast, indigo-blue; abdomen, black; under tail-coverts, white; bill and legs, red. In the young, the feathers on the back and wings are tipped with green, and those on the breast with buff.

Albino varieties occur sometimes.

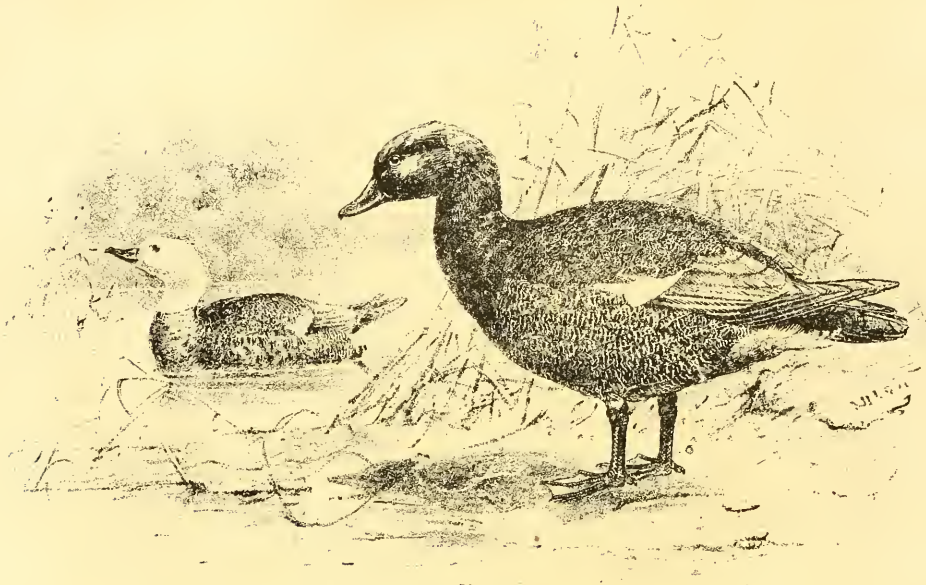
L., 17; W., 10; B., 1·6; T., 3·6.

Egg.—Greyish-brown, with dots and blotches of grey and brownish-violet; length, 2·2; breadth, 1·5.

Hab.—Both Islands; Chatham Islands, Australia, Tasmania, New Caledonia.

"The Swamp-hen is widely distributed over Tasmania, the greater part of the continent of Australia, New Zealand, and the Chatham

Islands. It occurs also in New Caledonia; and the Maoris have a tradition that tame ones were brought by their ancestors in their migration from the historic 'Hawaiki.' It is abundant in our country in all localities suited to its habits of life, such as marshes, flax-swamps, and lagoons covered with beds of raupo and rushes. It also frequents the banks of freshwater streams; and in places contiguous to these haunts it is accustomed to resort, in the early morning, to the open fields and cultivated grounds in quest of food. It subsists principally on soft vegetable substances, but it also feeds on insects and grain. By the aid of its powerful bill it pulls up the inner succulent stems of the raupo, or swamp-reed, and nips off the soft parts near the root, holding the object in the toes of one foot while feeding, something after the manner of a Parrot. It is a noticeable fact that in many of the settled districts its numbers have perceptibly increased within the last few years, owing, no doubt, to the greater abundance of food afforded by the farms and plantations of the colonists. Large flocks of them may often be seen spread over the stubble-fields, or diligently at work in the potato-grounds or among the standing corn. On being disturbed they generally run to the nearest cover, only taking wing when pressed or when suddenly surprised. They rise from the ground rather awkwardly, the legs dangling and the wings being hurriedly flapped; by degrees the trailing legs are raised to the level of the body; and the flight then becomes more steady, but is nevertheless laboured and heavy. As a rule, they fly only a short distance, dropping into the nearest shelter that offers itself, and trusting for escape to their swiftness of foot; when fairly mounted in the air, however, they are capable of a rather prolonged flight, as I have many times had an opportunity of witnessing."—Buller.



THE PARADISE DUCK.
(Male and Female.)
CASARCA VARIEGATA.

ORDER VIII. ANSERES: SWIMMERS.

Legs, short, and placed far back; toes connected by a membrane.

ANATIDÆ.

Bill, depressed, broad, laminated on the sides.

DENDROCYGNA. *Swains.*

Bill, higher at the base than broad; wings, short, rounded, second to fourth longest; first, with a deep notch in the middle; secondaries, nearly as long as the quills; middle toe protruding beyond the membrane; hind toe, very long, elevated, simple.
India, Africa, South America, Australia, West Indies.

97. Dendrocygna eytoni. *Gould.*

WHISTLING DUCK.

Above, dark brown; sides of the head and neck, fawn-colour; throat and breast, brownish-white; upper abdomen and flanks, ferruginous, barred with black; lower abdomen, buffy-white; bill, black, banded with red; legs and feet, flesh-colour.
L., 18; W., 10; B., 2; T., 2.
Hab.—Stragglers in Auckland and Otago; Australia.

CASARCA. *Bp.*

Bill, as long as the head, as wide as high at the base; second quill the longest; toes, long, full-webbed; hind toe elevated, lobed.
Europe, Asia, Africa, Australia, Tasmania.

98. Casarca variegata. *Gml.*

SHELDRAKE. PARADISE DUCK. PUTANGITANGI.

(Plate XXIX.)

Head, neck, and breast, black; back, black, pencilled with white; abdomen, ferruginous, pencilled with black; wing-coverts, white. In the female the head and neck are white, and the breast is like the abdomen.
L., 25; W., 14·5; B., 2; T., 2·5.
Egg.—White; length, 2·75; breadth, 1·85.
Hab.—Both Islands.

"Of the eight species of this tribe inhabiting New Zealand the 'Paradise Duck' of the colonists is undoubtedly the finest. It is spread all over the South Island, being extremely abundant in some localities; but in the North Island its range does not extend beyond latitude 39° S. It is difficult to understand why it should be thus confined; but, with the exception of a flock of five seen some years ago in the Kaipara district, I have never heard of its occurrence north of this line. At certain seasons of the year it associates in large flocks, which migrate from one part of the country to another, resorting at one time to the river-mouths and salt-marshes near the sea-coast, and at another retiring to the grassy plains and lagoons of the interior. In winter a partial separation of the sexes appears to

take place, it being a common thing to see a flock of ten or more drakes to one duck, and *vice versâ*. At other times they wander about in pairs; and, whether reposing on the water or feeding on the shore, their strongly-contrasted colours cannot fail to arrest and please the eye. . . . .

"In districts where it has been much molested it becomes exceedingly shy; and it is then impossible to shoot it except by stratagem. One bird appears to keep watch while its mate is feeding; and on the slightest alarm it sounds its note of warning, to which the other responds; and both then observe the strictest vigilance, taking wing on the first approach of danger. The call-notes of the two sexes differ remarkably; the drake, with his head bent downwards, utters a prolonged guttural note, '*tuk-o-o-o, tuk-o-o-o;*' and the duck, elevating her head, responds to her mate with a shrill call, like the high note of a clarionet."—BULLER.

QUERQUEDULA. *Steph.*

Bill, as long as the head; height, equal to the breadth at the base, of equal width throughout; lamellæ hardly visible; second quill the longest; secondaries lengthened; tail, wedge-shaped; hind toe, short, slightly lobed.

All parts of the world.

99. Querquedula gibberifrons. *Muller.*

LITTLE TEAL. TETE.

Above, brown, with a white bar on the wing; throat, yellowish-white; abdomen, brownish-fulvous, spotted with brown; speculum, green.

L., 16; W., 8; B., 1·6; T., 1·25.

Hab.—Both Islands; Australia, New Caledonia, Indian Archipelago.

NOTE.—Professor Hutton thinks this is *Anas castanea*, Eyton.*

ANAS. *L.*

Bill, longer than the head, higher than broad at the base, of nearly equal breadth throughout; first quill the longest; tertials lengthened; tail, wedge-shaped; hind toe, small, somewhat lobed.

All parts of the world.

100. Anas chlorotis. *Gray.*

BROWN DUCK. PATEKE.

Above, greyish-brown, varied with rufous; breast, rufous; abdomen, yellowish-brown, spotted with black; speculum, greenish-black, bordered above and below with rufous-white; circle of whitish feathers round the eye. Head of male tinged with green.

L., 18; W., 8; B., 2; T., 1·5.

Variable; sometimes with a white band on the forepart of the neck.

Egg.—White; length, 2·45; breadth, 1·85.

Hab.—Both Islands and Chatham Islands.

"This elegant little Duck is distributed all over the country, being met with in every inland lake, and often in the deep fresh-

* Transactions N. Z. Institute, Vol. XII., pp. 271, 272.

water streams which run into them, where the overhanging vegetation affords ready shelter and concealment. It is a very indifferent flier, but swims well and dives with facility. When shooting on a lake near Tiakitahuna, in the Upper Manawatu, some years ago, I came upon a flock of sixty or more of these birds: instead of taking wing when closely followed, they swam towards the shore, and then, forming into a line, they hurried forward in a very impetuous manner, keeping close under the banks of the lake, and uttering a low confused twitter."—Buller.

101. Anas superciliosa. *Gml.*

Grey Duck. Parera.

Greyish-brown, varied with yellowish-white; eyebrows, cheeks, and upper part of neck, yellowish-white, with two small bands of blackish-brown on the cheeks; speculum, green, margined above and below with black.

L., 23; W., 10·3; B., 1·5; T., 1·3.

Egg.—White; length, 2·5; breadth, 1·7.

Hab.—Both Islands; Chatham Islands, Australia, Tasmania, Polynesia.

"Common in every part of our country, the Grey Duck ranges over the whole of Australia as well, and is found also in some of the Polynesian islands. I found it extremely abundant at the Chatham Islands; and it is said to occur on Norfolk Island also.

"It is deservedly in high estimation for the table, and may be regarded as perhaps the most valuable of our indigenous birds. It is less plentiful than it formerly was, which is no doubt partly attributable to the increased traffic on our rivers, but is chiefly owing to the indiscriminate use of the gun. . . . .

"It frequents rivers, bush-creeks, lagoons, and swamps, often consorting in large flocks, but more generally associating in parties of from three to seven. In some localities it affords very good shooting; and, being seminocturnal in its habits, a clear moonlight night is considered by many the best time for this kind of sport. The birds on reaching their feeding-ground make a circuit in the air to reconnoitre, and then descend in an oblique direction, the rapid vibration of their wings producing a whistling sound, very familiar and pleasant to the ear of a sportsman.

"Regarded as an article of food, the Grey Duck is in its prime during the autumn and commencement of winter; but the quality of the game differs according to the locality, those from the lakes and rivers of the interior having a richer flavour as a rule than birds living in the vicinity of the sea-shore, where the feed is coarser."—Buller.

Rhynchaspis. *Steph.*

Bill, longer than the head, much dilated for half its length from the tip; lamellæ long. Europe, Asia, North America, Australia.

102. Rhynchaspis variegata. *Gould.*

Shoveller. Kuruwhengi.

(Plate XXX.)

Above, dark brown; head and neck, dark grey, with a white line near the bill; breast, brown, varied with rufous-white; abdomen, dark rufous; wing-coverts, and a longitudinal stripe on the wings, ash-grey.

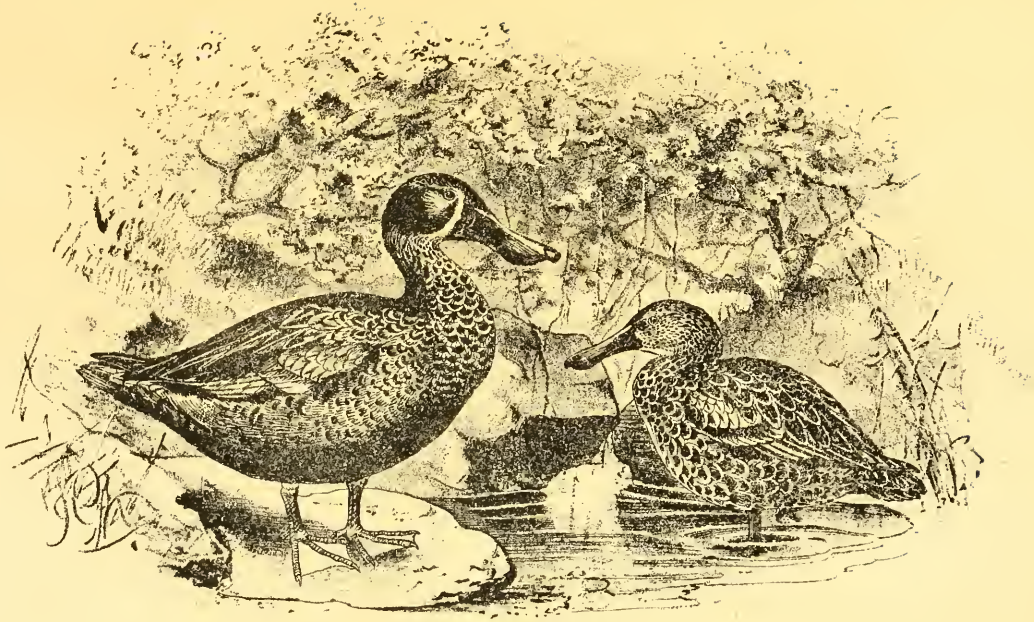
Female.—Brown.

L., 17·5; W., 10; B., 2·8; T., 1·3.

Egg.—Greenish-white; length, 2·1; breadth, 1·45.

Hab.—Both Islands, and Chatham Islands.

"It is by no means a common species in any part of New Zealand, while in the northern portions of the North Island, so far as I am aware, it has never yet been met with. It frequents the shallow lagoons near the sea-coast, and the quiet bush-creeks overshadowed by trees, usually associating in pairs, but sometimes forming parties of three or more. It flies with rapidity, and often at a considerable elevation, descending to the ground or water in a slanting manner, and with the wings bent in the form of a bow. When disturbed on the water it produces a low whistling note; but it is far less suspicious than the common Grey Duck, and is easily approached and shot. It subsists on minute freshwater mollusks, aquatic insects, tender herbage, and the seeds of the toetoe and other plants; on opening the stomachs of several I have found a mass of comminuted substances of a greenish colour, among which could be distinguished fragments of vegetable matter, seeds, the remains of insects, and numerous small pebbles of white chalcedony. It no doubt extracts much organic matter from the slimy mud and sand in the places it is accustomed to frequent, inasmuch as Nature has furnished it with a very remarkable spoon-shaped bill, from which it derives its popular name. The surface of the upper mandible is smooth, but slightly furrowed from the nostrils outwardly, and in its anterior portion is marked with numerous punctures; its nail is almond-shaped, and forms a strong overhanging lip with a hard cutting-edge; in the lower mandible there is a corresponding development, resembling in shape the human finger-nail, which fits into the upper process, forming, so to speak, a strong terminal beak; the lamellæ are highly developed in both mandibles, presenting a comb-like appearance; and in addition to this the lower mandible has a rasped outer edge."
—Buller.



THE SHOVELLER DUCK.

RHYNCHASPIS VARIEGATA.

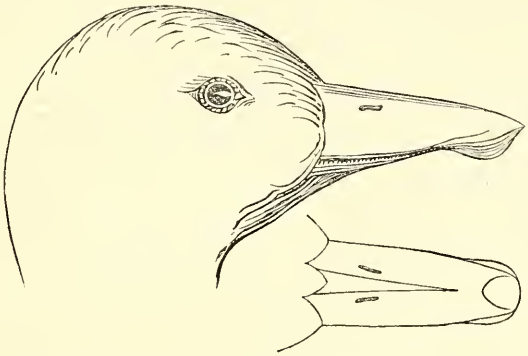
THE SCAUP OR BLACK TEAL.
FULIGULA NOVÆ-ZEALANDIÆ.

THE BLUE MOUNTAIN DUCK.
HYMENOLÆMUS MALACORHYNCHUS.

PL. XXXI. *pp.* 71, 72.

Hymenolæmus. *Gray.*

Bill, as long as the head, furnished with a loose skin for half its length from the tip; wings, short; hind toe, strongly lobed; large callosities on the wing-joint.
New Zealand only.



103. Hymenolæmus malacorhynchus. *Gml.*

Blue or Mountain Duck. Whio.
(Plate XXXI.)

Above, slate-blue; below, the same, spotted with rufous on the breast, and varied with grey; bill, pinkish-white.
L., 17·5; W., 8·5; B., 2; T., 1·75.
Egg.—White; length, 2·7; breadth, 1·75.
Hab.—Both Islands.

"Far up the mountain-gorge, where the foaming torrent, walled in on both sides, rushes impetuously over its shingle-bed, surging around the huge water-worn boulders that obstruct its course, and forming alternately shallow rapids and pools of deep water, there the Blue Duck is perfectly at home; and its peculiar whistling or sibilant note may be readily distinguished amidst the noise of the rushing waters; indeed, as Mr. Travers has already suggested, the bird appears to have been specially endowed with this singular note in consequence of its frequenting such localities. A stray one is sometimes carried down during a freshet into the still reaches or even to the very mouth of the stream; but it speedily works its way back again to its favourite mountain haunts. It is a very tame or stupid bird, often remaining perfectly quiet on a projecting boulder till you approach within a few feet of it; then, sidling off into the water, it swims into the nearest rapid and allows itself to be hurried down by the current. It seldom dives, and takes wing only when fired at or closely pressed; but it swims with considerable rapidity, the head being carried low and inclined somewhat forward. It has the faculty of turning itself round in the water, and without losing ground, however rapid the

stream, as though its body were worked on a pivot—a performance, no doubt, aided by the peculiar lengthened shape of its tail. It climbs the slippery face of the rocks with facility, assisting itself in the ascent by its wings, which are armed at the flexure with a hard protuberance or knob."—Buller.

Fuligula. *Steph.*

Bill, nearly as long as the head, broader at the base than high; first quill the longest; tarsi, half the length of the middle toe; hind toe deeply margined with a membraneous web.

North regions of America, Europe, and Asia.

104. Fuligula novæ-zealandiæ. *Gml.*

Scaup. Black Teal. Papango.

(Plate XXXI.)

Above, black; abdomen, brownish-white, darker on the vent; speculum, white.
Female.—Above, dull black; below, brown, mottled with white; a band of white round the upper mandible.
L., 16; W., 7·5; B., 1·75; T., 2·5.
Egg.—White; length, 2·7; breadth, 1·7.
Hab.—Both Islands.

"This small Duck has all the habits of a true Scaup, although it is generally called by other names. It is freely distributed over the country, frequenting most of the rivers and lagoons, but seldom being met with in the bush-creeks, and never on the open sea-shore. In winter it associates in large flocks, mingling freely with the Grey Duck and other species; but at other times it is more generally met with in pairs or in parties of four or five together. Its powers of flight are very feeble; it takes wing with reluctance, and never rises high in the air, generally only skimming the surface; but it is a very expert diver, and usually trusts to this faculty for eluding pursuit. Even when mortally wounded it will often escape by this means, and take refuge in the dense sedge, whence it can only be dislodged by a retriever well trained to the work."—Buller.

Nyroca. *Flem.*

Bill, as long as the head, higher at the base than broad; first and second quills equal and longest; rest as in *Fuligula*.

Europe, Asia, Africa, North America, Australia.

105. Nyroca australis. *Gould.*

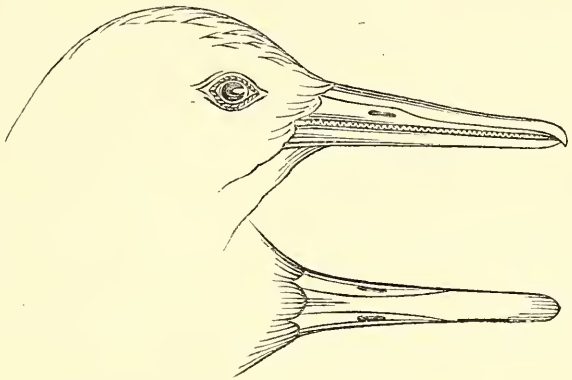
White-winged Duck. Karakahia.

Head and breast, dark rufous-brown; back and abdomen, brown; lower breast and under tail-coverts, white; speculum, white.
L., 20; W., 8·5; B., 2·2; T., 1·5.
Hab.—Both Islands; Australia.

Mergus. *Linn.*

Bill, as long as or longer than the head, culmen elevated, convex towards the tip, which is hooked, and armed with a broad nail; the lateral margins of both mandibles serrated with widely-set teeth, all pointing backwards; wings moderate, with first and second quills nearly equal.

North temperate regions, and restricted in the south, so far as at present known, to the Auckland Islands.



106. Mergus australis. *Hombr. et Jacq.*

Merganser.

Above, blackish-brown; paler and with whitish tips on the sides of the body; secondaries, crossed by a broad band of white; throat, fulvous-white; sides of the head and whole of the neck, rufous-brown; breast, abdomen, and under tail-coverts, greyish-brown, largely mixed and varied with white; bill and feet, reddish-brown.

L., 20; W., 7; B., 2·25; T., 1.75.

Hab.—Auckland Islands.

COLYMBIDÆ. Divers.

Bill, long and straight; tail, very short; tarsi, short and flattened; toes, long, the three anterior ones more or less united by a membrane; hind toe, short, membraned.

Podiceps. *Lath.*

Wings, short, pointed; toes, long, margined on the sides and united at the base to the middle one; hind toe, short, strongly lobed.

All parts of the world.

107. Podiceps cristatus. *L.*

Crested Grebe.

Above, brown; below, white; top of the head, black, with a double crest; chin, white; ruff on the neck, rufous, tipped with black; shoulders, and a band on the wings, white.

The neck and breast are in some tinted with rufous-brown.

L., 22; W., 7·75; B., 2·75; T., 2·75.

Egg.—At first greenish-white, then yellow-brown; length, 2·35; breadth, 1·6.

Hab.—South Island, Australia, Europe, Asia, North America, South Africa.

"*Podiceps cristatus* is found at all seasons of the year upon Lake Guyon, a small lake in the Nelson Province, lying close under the Spencer mountain-range, and upon the borders of which the station-

buildings connected with a run occupied by me are situated. The water of this lake is generally very warm, and even in severe seasons has never been frozen over. To this fact I attribute the circumstance that some of these birds are to be found upon it throughout the year. There are several apparently permanent nests on the borders of the lake, which have been occupied by pairs of birds for many years in succession, from which I am led to infer that, as in the case of some of the Anatidæ, these birds pair for life. These nests are built amongst the twiggy branches of trees which have fallen from the banks of the lake, and now lie half floating in its waters, and are formed of irregularly-laid masses of various species of pond-weeds, chiefly *Potamogeton*, found growing in the lake, and which the birds obtain by diving. They are but little raised above the surface of the water; for, in consequence of the position and structure of its feet, and the general form of its body, the Grebe is unable to raise itself upon the former unless the body be in great measure supported by water.

"The eggs are usually three in number, and are somewhat peculiar in form, having an apparent thickening in the middle and tapering towards both ends. When first laid they are of a chalky and slightly greenish hue, but soon become completely discoloured. Whether this discoloration is solely due to contact with the materials of the nest, or whether the birds themselves, under the influence of some instinctive habit, contribute towards it, I am not prepared to say."—Travers.

"The specimen on which I founded my original description of *Podiceps hectori* was in an imperfect condition, and the supposed absence of the white secondaries proved afterwards to be merely accidental; but, as I have already pointed out in a paper read before the Wellington Philosophical Society, there appears to be a distinct race inhabiting some of the South Island lakes, and distinguished by the dark colour of the underparts. Dr. Hector considers this a good species, and states that he found it on the Wakatipu Lake, accompanied by young, and exhibiting the double crest and red ruff which characterize the fully adult bird; while in brackish lakes by the coast, where old and young birds, as well as eggs, were obtained, none but white-breasted ones were ever shot.

"On a comparison of the two forms I find that the Wakatipu bird (of which there are several examples) is rather larger than ordinary specimens of *P. cristatus*, has the upper parts perfectly black, and the fore neck and underparts greyish-brown, tinged with rufous; the lores, moreover, are black, the rufous-white commencing at the angle

of the mouth, and passing under the eyes to the ear-coverts. It will, of course, be necessary to obtain a larger series of specimens, establishing the constancy of these characters, before the question can be set at rest; but, if the dark-breasted bird should hereafter prove to be a distinct species, I must claim from naturalists its recognition as the true *Podiceps hectori*."—Buller.

108. Podiceps rufipectus. *Gray.*

Dabchick. Totokipio.

Above, blackish-brown, finely streaked with white on the head; throat, brown; breast, rufous; abdomen, white.

Breast sometimes clouded with dirty yellow.

L., 10·5; W., 4·75; B., 1·1; T., 1·4.

Egg.—White; length, 1·65; breadth, 1.

Hab.—Both Islands.

"Like the other members of the group, it dives with amazing agility, and, unless taken by surprise, will effectually dodge the gun by disappearing under the surface at the first flash, and before the charge of shot has reached it. It is capable of remaining under water a considerable time, and when wounded it hides by submerging the body, and leaving only its bill and nostrils exposed. When hunting for its food, which consists of small mollusca, among the aquatic plants at the bottom of the lagoon, it usually remains under about twenty seconds, and then rises to the surface for an interval of seven seconds, repeating these actions with the utmost regularity, as I have observed by timing them with my stop-watch. It flies with difficulty, and only for a short distance, skimming the surface with a very laboured flapping of its little wings. On the water it swims low, and with a rapid jerking movement of the head. The form of its body and the laminated structure of its feet are admirably adapted to its subaqueous performances; and in clear water I have watched the bird gliding easily along the gravelly bottom, with the neck stretched forward and moved from side to side, and the wings partially open, the feet being used as a means of progression."—Buller.

LARIDÆ. Gulls.

Bill long, nostrils lateral; wings, long; hind toe, short and elevated.

Lestris.

Bill, straight, hooked at the end, basal part covered with a cere; tarsi, longer than the middle toe.

The colder parts of both hemispheres.

109. Lestris catarractes. *Quoy et Gaim.*

Sea-hen. Hakoakoa.

Brown, finely streaked with pale yellow on the back of the neck; back, wing- and tail-coverts, varied with white; basal half of the quills, white; shafts, white.

L., 25·5; W., 17; B., 2·25; T., 2·8.

Egg.—Pale brownish-green, spotted, chiefly at the obtuse end, with large, indistinct, pale purple and brown blotches; length, 3; breadth, 2·1 (Layard).

Hab.—South Island; both hemispheres outside the tropics. Two instances are mentioned of its occurrence in the North Island. Breeds in Dusky Sound.

110. Lestris parasiticus. *Temm.*

Skua Gull.

Back and wing-coverts, brownish-cinereous; top of the head, brown, varied with white; neck and breast, white; abdomen, dusky; quills and tail, black; two middle tail-feathers lengthened.

L., 15·5; W., 11·2; B., 1·8; T., 1·65.

Hab.—Cape of Good Hope; colder parts of Northern Hemisphere.

Four specimens have been recorded at various times, and in different states of plumage, on the New Zealand coast. (See Trans. N.Z. Inst., Vol. XI., pp. 355–359.)

Larus. *L.*

Bill arched at the tip, nostrils near the middle; tarsi, nearly as long as the middle toe. All parts of the world, except Polynesia.

111. Larus dominicanus. *Licht.*

Black-backed Gull. Karoro.

(Plate XXXII.)

White, with black back and wings, secondaries tipped with white.

Young.—Brown, mottled with white; over the tail, white, banded with brown.

L., 25; W., 16·5; B., 2·25; T., 2·25.

Egg.—Yellowish-grey, marked with grey and dark-brown blotches; length, 2·85; breadth, 1·85.

Hab.—The whole Southern Hemisphere.

"This fine Gull, which ranges over the whole Southern Hemisphere, is extremely plentiful on all our coasts, preferring, however, the smooth sea-beaches and the sandy spits at the mouths of our tidal rivers. In these localities it is always to be met with, either singly or associated in large flocks, and mixing freely with the smaller species of Gulls, Terns, Oyster-catchers, and other shore-birds. It frequents the harbours, and hovers around the vessels with much clamour, waiting to pick up any morsel that may chance to be thrown overboard. It follows in the wake of the departing steamer as it quits the still waters for the stormy offing, and often accompanies it far out to sea, eagerly watching for stray bits of food as they float astern, and disputing their possession with the Albatros and Cape-Pigeon, on whose domain it has thus far trespassed. During very stormy weather it often travels some miles inland, and at the breeding-season it occasionally penetrates far up the river-courses in search of a secure nesting-place. It also frequents the pastures at a distance from the coast in quest of food, doing good service to the farmer by its large consumption of caterpillars and other insect pests. On the sea-shore it subsists chiefly on a species of bivalve, and displays much ingenuity in breaking the hard shell to get at the contents: seizing

it between its powerful mandibles, it runs a few steps, then spreads its wings and mounts in the air to a height of thirty feet or more, when it lets the bivalve drop on the hard sandy beach, and descends to pick out the mollusk from the broken fragments. Should the first attempt to break the shell by this means prove a failure, the bird repeats the operation; and I once witnessed nine successive attempts before the firm shell yielded. On riding up to the spot I found that the shell was of unusual thickness, and measured more than two inches across the surface. Small crustacea, sandhoppers, dead fish, and carrion of all kinds are also laid under contribution, as this Gull is both omnivorous and voracious. In a state of domestication it will feed freely on cooked vegetables, or on anything that may be offered to it, although it always gives the preference to fresh meat of any kind."—Buller.

112. Larus scopulinus. *Forst.*

Mackerel Gull. Tarapunga.

White, with pale ash-grey back and wings; secondaries, ash; first and second quills black, with a large spot of white near the tips, most of the others white, with a black band near the tips, all tipped with white; spurious wing, white; bill, red in summer, reddish-black in winter, and in the young birds; legs and feet red, reddish-black in the winter.

L., 17; W., 12·25; B., 2; T., 2.

Egg.— Yellowish-grey, marked with grey and dark-brown blotches; length, 2·1; breadth, 1·5.

Hab.—Auckland Islands, Australia, Tasmania, New Caledonia.

"This pretty little Gull is one of our commonest birds, frequenting every part of the coast, and being equally plentiful at all seasons of the year. It is a bird of very lively habits, and its presence goes far to relieve the monotony of a ride over such dreary stretches of sand as the Ninety-mile Beach and the coast-line between Wanganui and Wellington. At one time you will meet with a flock of fifty or more in council assembled, fluttering their wings, chattering and screaming in a state of high excitement; at another you will observe them silently winnowing the air, turning and passing up and down at regular intervals, as they eagerly scan the surface of the water. Here you find them ranged apart along the smooth beach like scouts on a cricket-ground; there you see a flock of them packed together on a narrow sand-spit, standing closer than a regiment of soldiers, heads drawn in, one foot up, 'standing at ease.' Then, again, if you observe them closely you may see them following and plundering the Oyster-catcher in a very systematic manner. Nature has furnished the last-named bird with a long bill, with which it is able to forage in the soft sand for blue crabs and other small crustaceans. The Mackerel-Gull is aware of this, and cultivates the society of his long-billed neighbour to some advantage: he dogs his steps very persever-

ingly, walking and flying after him, and then quietly standing by till something is captured, when he raises his wings and makes a dash at it. The Oyster-catcher may succeed in flying off with his prey; but the plunderer, being swifter on the wing, pursues, overtakes, and compels a surrender. The gentleman of the long bill looks gravely on while his crab is being devoured; and, having seen the last of it, he gives a stifled whistle, and trots off in search of another, his eager attendant following suit.

"It frequents our harbours in large numbers, hovering round the shipping, and associating freely with the Black-backed Gull; but, although it often follows the vessel from its anchorage, it does not venture so far out to sea as its larger congener."—Buller.

113. **Larus bulleri.** *Hutton.*

Black-billed Gull.

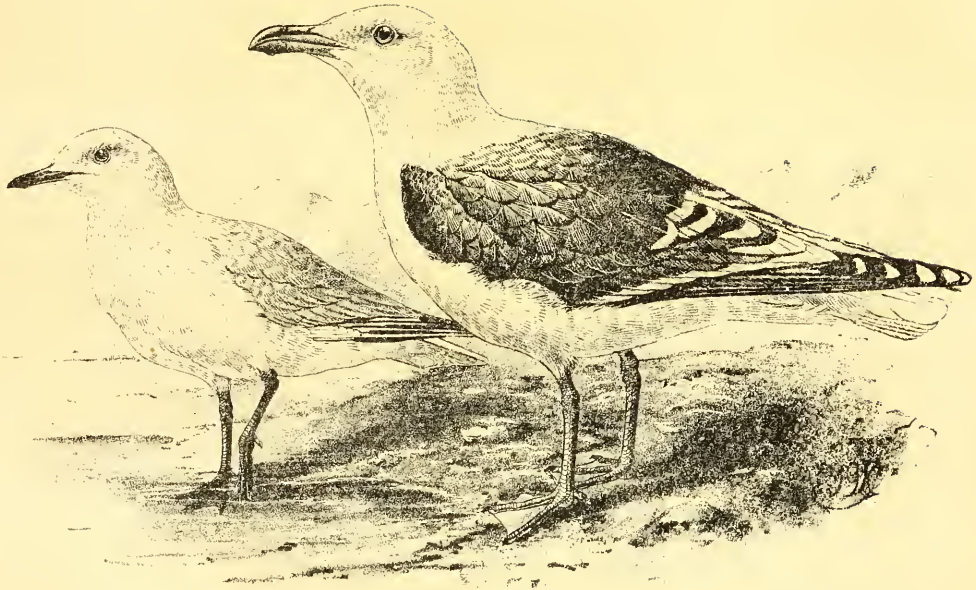
(Plate XXXII.)

Like *scopulinus*, but the first three quills are white, margined with black, all tipped with white; spurious wing, white; legs and feet, red in the adult, reddish-black in the young; bill, reddish-black in the adult, black in the young.

L., 14; W., 11·65; B., 2; T., 1·55.

Hab.—Both Islands, on inland lakes.

"The Black-billed Gull breeds on the Waiau river-bed; and one or more pairs usually frequent Lake Guyon after the breeding-season is over. On one occasion a pair of these birds, having by some means or other lost their own brood, returned to the lake earlier than usual. I brought up a young bird belonging to another brood, and placed it on the lake; and the bereaved parents at once took to it, tending it with the greatest care and solicitude. It is extremely interesting to watch these birds in their ordinary search for food during windy weather. The prevalent winds blow either up or down the lake; and, when seeking food, the birds soar against the wind along the margin of the lake on one side, until they reach its extremity, when they at once turn and run down before the wind to the other end, where they recommence their soaring flight. But the most singular circumstance is that in the main valley they pursue various species of moths, which occur in large numbers amongst the tussock grasses, and especially in sedgy patches occupied by standing water. I could not for some time make out the object of their peculiar flight; but a friend of mine (Mr. R. W. Fereday, of Christchurch), who was lately on a visit with me for the purpose of collecting the Lepidoptera of the district, whilst pursuing a large moth, observed one of these Gulls swoop at and capture it. We then noticed that some five or six of the birds were busily engaged in feeding on the moths, pursuing them very much as insectivorous birds would do. The birds which frequent



THE BLACK-BILLED GULL.
LARUS BULLERI.

THE BLACK-BACKED GULL.
LARUS DOMINICANUS.

the lake become very tame, one pair in particular readily taking a worm from my outstretched hand, and constantly coming close to the house for food. Nothing can exceed the pureness and delicacy of their plumage when in full feather. It is doubtful whether this kind ever visits the sea-coast."—TRAVERS.

STERNA. *L.*

Bill, long, slightly arched, frontal feathers advancing close to the nostrils; tail, long, forked; tarsi, short; toes united by an indented web, hind toe very short.
All parts of the world.

114. Sterna caspia. *Pall.*

CASPIAN TERN. TARA-NUI.

White, with the back and wings ash-grey; top of the head, black in the spring, but white, spotted with black, during the rest of the year; bill, red; legs, black.
L., 24; W., 16; B., 3·75; T., 2.
Egg.— Greyish-white, sparingly spotted with dark-grey and brown; length, 2·6; breadth, 1·75.
Hab.—North America, South Africa, Australia, South Europe, India.

"The history of this fine Tern has already been so fully written that I deem it sufficient to record here that it occurs all round the New Zealand coasts, where its habits are the same as in other parts of the globe. It is usually met with in pairs; but I have occasionally observed parties of five or more resting on the sands near the mouths of our tidal rivers. It subsists entirely on small fish, for which it plunges into the water with considerable force; and at certain seasons it is accustomed to follow the shoals of sprats far up the river-courses, where it may be seen hovering lightly over the water in pursuit of its finny prey, and occasionally alighting to rest on a jutting stump or projecting point of rock. I have observed that, on the wing, this species does not move its head to and fro in the manner of the smaller Terns, but carries it vertically, with its powerful beak pointing downwards. When resting on the ground the apparently disproportionate head gives the bird an ungainly appearance: but this disappears the moment the wings are expanded; and the flight, which is generally performed in wide circles, may be described as very easy and graceful. Its ordinary cry is harsh and unmusical, consisting of a loud rasping note; at other times it utters a long peevish squeal or whistling cry."—BULLER.

115. Sterna frontalis. *Gray.*

SEA-SWALLOW. TARA.

White; back and wings, ash; top of the head, black; a white line over the bill; bill, black; legs and feet, reddish-brown.
L., 15; W., 10·5; B., 2·25; T., ·75.
Egg.—Yellowish-brown, blotched with grey and black; length, 1·85; breadth, 1·35.
Hab.—Both Islands.

"The term 'Sea-swallow,' as applied to this Tern, is a very appropriate one; for on watching the evolutions of a flock of these birds one is forcibly reminded of a flight of Swallows coursing in the air. Their aërial manœuvres are truly beautiful; and the apparent ease with which they dip into the water and capture their finny prey cannot fail to interest an observer. They usually alight on the sandy beach near the edge of the water, and stand so closely packed that thirty or forty may be obtained at a single shot. They shuffle about with a constant low twittering, and occasionally stretch their wings upwards to their full extent, presenting a very pretty appearance. When fired at, or otherwise alarmed, the whole flock rises simultaneously in the air in a vortex of confusion, crossing and recrossing each other as they continue to hover over the spot, producing at the same time a perfect din with their sharp cries of '*ke-ke-ke.*'

"Some years ago, when exploring among the shoals and sand-banks of the great Kaipara heads or basin, I observed thousands of these birds; and in this wild and unfrequented part of the coast they were so fearless that they coursed about our boat within a few feet of our heads, and the discharge of a gun among them only tended to increase their apparent interest in us. . . . .

"This species of Tern breeds in large colonies, as many as two hundred or more being sometimes associated together. The eggs are deposited on the bare rock, often within reach of the sea-spray; and, as a rule, there is only a single egg to each nest. They are usually of an elegant ovoido-conical form, measuring 1·9 inch in length by 1·3 in breadth; and they present great beauty and diversity in their colouring. The ground-tint varies from a clear greyish-white to a delicate greyish-green, and from a pale yellowish-brown to a dark cream-colour. They are marked and spotted with purplish and dark brown in every variety of character: some have the entire surface studded with clear rounded spots, occasionally confluent; others have the marks broad and irregular; while in some examples they are spread into large dark blotches, covering a great portion of the surface. Some specimens are freckled all over with light brown, and splashed at intervals with darker brown; others have a smudged appearance, as though an attempt had been made to obliterate the markings. In the Canterbury Museum there is a curious example, having the entire surface covered with marbled veins of dark brown; and another (collected by Mr. Fuller on the Waimakariri beach, and ascribed by Mr. Potts with certainty to this species) is of a delicate pinkish-brown tint, with a broad zone of confluent spots towards the

larger end, and numerous scattered specks of a rich reddish-brown colour."—BULLER.

116. Sterna antarctica. *Forst.*

COMMON TERN. TARA.

Ash-grey; white over the tail; top of the head and back of the neck, black, margined with white; tail, ash-grey; bill, orange; legs, red.
L., 10·5; W., 9; B., 1·5; T., ·75.
Egg.—Yellowish-grey, spotted with grey and brown; length, 1·5; breadth, 1·1.
Hab.—Both Islands.

"In the Canterbury Province it is particularly abundant, frequenting all the river-courses and often spreading far over the plains. Within a few miles of the City of Christchurch I have observed it, in large flights, following the farmer's plough, and picking up grubs and worms from the newly-turned earth. It also frequents the cornfields and pastures, and, by devouring caterpillars and other insect pests, proves itself a valuable friend to the agriculturist.

"It is remarkably active on the wing, performing very rapid evolutions, and often chasing its fellows in a playful manner and with much vociferation. When resting on the ground the members of a flock stand closely packed together, and may be seen constantly stretching their wings upwards in the peculiar manner already noticed in treating of *Sterna frontalis*."—BULLER.

117. Sterna nereis. *Gould.*

LITTLE TERN. TARA-ITI.

Ash-grey; forehead and over the eye, white; a spot before the eye, and top of the head, black; tail, white; bill and legs, orange.
L., 9; W., 7·25; B., 1·75; T., ·7.
Egg.—White, spotted with pale grey; length, 1·35; breadth, ·9.
Hab.—Both Islands; Australia, Tasmania.

"This is the smallest of our Terns, and is the southern representative of the *Sterna minuta* of Europe. It is tolerably common on all our coasts, and occurs also very plentifully along the shores of Western Australia.

"It is very active in its movements, flies high, turns in the air with facility, and dips into the water after its prey in a very adroit manner."—BULLER.

HYDROCHELIDON. *Boie.*

Tail, emarginate; toes, united only at the base, the web continuing along the inner margin of each toe; hind toe, moderate.

118. Hydrochelidon leucoptera. *Temm.*

WHITE-WINGED TERN.

Head, neck, breast, and abdomen, deep-black; back, greyish-black; tail, white; quills, silver-grey, darker on the inner webs; bill, reddish-black; legs and feet, red.
L., 9; W., 8·75; B., 1; T., ·75; tail, 3·15.
Hab.—Europe, Australia. Occasional visitant.

"I know of only one instance of the occurrence of this beautiful Tern in New Zealand. On the 12th of December, 1868, the late Mr. D. Monro shot a pair of them on the Waihopai river-bed, in the Province of Nelson; and one of these is now in the Colonial Museum. They were in full summer plumage, and were associating with a large breeding colony of *Sterna frontalis;* but whether they were actually nesting themselves, Mr. Monro was not able to ascertain. He mentions, however, that there was only a single pair of this species in the flock, and that they uttered at intervals a harsh croaking note.

"This Tern has likewise been discovered in Australia since the publication of Mr. Gould's 'Handbook;' and, as it is unquestionably the same form as that inhabiting the palæarctic region, the species enjoys a wide geographical range."—Buller.

PROCELLARIDÆ. Petrels.

Bill, hooked at the tip; nostrils, in tubes.

Diomedea. *L.*

Bill long, nasal tubes disjoined, lateral; wings, long and narrow; hind toe absent. Colder parts of both hemispheres.

119. Diomedea exulans. *L.*

Wandering Albatros. Toroa.

White, with the back generally more or less pencilled with black; quills, dark-brown.
Young.—Chocolate-brown, with a white face.
L., 48; W., 27; B, 7; T., 4·5.
Egg.—White; length, 5; breadth, 3·25.
Hab.—Southern Ocean, below 30° S.

"What voyager on the high seas has not watched with wonder and admiration the sailing flight of the Albatros! It has been the theme of poets and philosophers from the earliest times; and various ingenious theories have been propounded to account for the amazing power which this bird possesses of sailing in the air for an hour at a time without the slightest movement of its expanded wings. Captain F. W. Hutton, whose observations on the birds inhabiting the Southern Ocean ('Ibis,' 1865) are full of suggestive information, has contributed an essay on the flight of the Albatros; and, although his mathematical treatment of the subject has been challenged, his paper shows a very clear apprehension of the mechanical principles on which the explanation rests, his main object being to show that if an Albatros started with a certain velocity it could, by slightly altering the angle at which it was flying, continue to support itself in the air without using its wings until its velocity had been reduced below a certain point."—Buller.

"The powers of flight of the Wandering Albatros are much greater than those of any other bird that has come under my observation. Although during calm or moderate weather it sometimes rests on the surface of the water, it is almost constantly on the wing, and is equally at ease while passing over the glassy surface during the stillest calm, or flying with meteor-like swiftness before the most furious gale; and the manner in which it just tops the raging billows and sweeps between the gulfy waves has a hundred times called forth my wonder and admiration. Although a vessel running before the wind frequently sails more than two hundred miles in the twenty-four hours, and that for days together, still the Albatros has not the slightest difficulty in keeping up with the ship, but also performs circles of many miles in extent, returning again to hunt up the wake of the vessel for any substances thrown overboard."—Gould.

120. Diomedea melanophrys. *Boie.*

Mollymawk. Black-eyebrowed Albatros.

White, with the back, wings, and tail, and a line through the eye, black; bill, light yellow.
L., 34; W., 20; B., 4·25; T., 3·25.

"This species of Albatros is far more common in our seas than *Diomedea exulans*, and approaches nearer to the coast, often following a vessel to the very entrance of the harbours. After boisterous weather it is sometimes picked up on the ocean-beach, not actually lifeless, but so exhausted by fatigue as to be incapable of rising."—Buller.

121. Diomedea chlororhyncha. *Gml.*

Yellow-nosed Albatros.

Like the last; but the bill is black, with the upper ridge bright-yellow.
L., 34; W., 19; B., 4·5; T., 3.

122. Diomedea culminata. *Gould.*

Grey-headed Albatros.

Like the last, but the bill is yellow on both the upper and lower edges.
Young.—Head and neck, grey; yellow on bill, obscure.
L., 32; W., 20; B., 4·15; T., 3.

123. Diomedea fuliginosa. *Gml.*

Cape Hen. Sooty Albatros.

Blackish-brown, darkest on the face; back and abdomen, grey, lightest on the shoulders; tail, wedge-shaped; bill, black, with a blue line on the lower mandible; feet, yellow. The young are entirely blackish-brown.
L., 28; W., 21; B., 4·5; T., 3.
Egg.—White; length, 4·2; breadth, 2·5. (Layard.)

"There is a specimen of this Albatros in the Auckland Museum; and Dr. Crosbie, of H.M.S. 'Virago,' showed me the head of another.

Both of these, as I am informed, were obtained off the New Zealand coast, although the proper range of the species appears to lie in more northern latitudes."—Buller.

124. Diomedea cauta. *Gould.*

Shy Albatros.

Head and neck, delicate pearl-grey, shading off to white on the crown and forehead; lores and line over each eye, greyish-black; back and wings, greyish-brown; lower part of back, and all the under-surface, pure-white; tail, silvery-grey; feet, fleshy-white. Bill, bluish-brown colour; upper mandible, margined at the base with a narrow black band; base of lower mandible, fringed on each side with a bright-yellow membrane, bordered behind with black, and forming a very distinguishing feature.

L., 35; W., 22·5; B., 5; T., 3·25.

Note.—Two examples recorded in New Zealand.

Ossifraga.

Nostrils, in a long tube on the top of the beak; wings, rather short; tail of sixteen feathers; hind toe, reduced to a claw.

125. Ossifraga gigantea. *Gml.*

Nelly. Giant Petrel.

Brown, sometimes mottled with white; bill, pale-yellow; legs and feet, brownish-black.

L., 36; W., 20; B., 3·75; T., 3·5.

Egg.—Dirty-white, rough; length, 4·25; breadth, 2·7. (Layard.)

"The Giant Petrel, or 'Nelly,' as it is called by sailors, is by no means uncommon in our seas, and occasionally ventures into the deep sounds or estuaries. The late Mr. J. Fuller informed me that he had observed this bird in the Akaroa Harbour following the carcass of a dead whale, and engaged in tearing off the blubber. A variety with white plumage is not uncommon, a fine specimen captured by Dr. Hector in Foveaux Strait being in the Colonial Museum.

"It is universally dispersed over the temperate and high southern latitudes; and Mr. Gould has expressed his belief that it frequently performs the circuit of the globe, a conclusion inferred from the circumstance that an albino variety followed the vessel in which he made his passage to Australia for a period of three weeks, the ship often making two hundred miles during the twenty-four hours."—Buller.

Haladroma.

Bill, shorter than the head; nasal tubes, united on the top of the bill, opening vertically upwards; wings, short; no hind toe.

126. Haladroma urinatrix. *Gml.*

Diving Petrel.

Above, brownish-black; below, white, tinted with blue on the sides; feet, blue.

L., 9; W., 5; B., ·75; T., 1.

Hab.—Both Islands.

"The Diving Petrel is very common in the seas surrounding New Zealand, consorting in flocks, and living on medusæ and other marine

productions. Its flight consists of a rapid fluttering movement along the surface of the water; and it dives through the waves with amazing agility."—Buller.

127. Haladroma berardi. *Quoy et Gaim.*

Similar to *H. urinatrix*, but with a more slender bill, and having the legs and feet yellowish, with dark webs.
L., 7; W., 4·25; B., ·6; T., ·75.
Hab.—Chatham Islands.

Puffinus. *Briss.*

Bill, not longer than the head, slender; nasal tubes, short, flat, obliquely truncated; hind toe, reduced to a claw.
All parts of the world.

128. Puffinus gavius. *Forst.*

Rain-bird or Wet-bird. Shearwater. Hakoakoa.

Above, brownish-black; below, white; bill, bluish-black; legs and feet, yellow, black on the outside margins.
L., 13·25; W., 8·4; B., 1·7; T., 1·5; tail, 3·25.
Hab.—Both Islands, South Pacific.

"This species of Petrel, which enjoys a wide oceanic range, is comparatively common in the seas surrounding New Zealand; and after stormy weather it is frequently picked up, either dead or in an exhausted state, among the sea-drift on the open strand."—Buller.

129. Puffinus brevicaudus. *Brandt.*

Brownish-black; bill, black, yellowish at the base; feet bluish, webs yellow.
L., 16·4; W., 10·75; B., 1·6; T., 2.
Egg.—White; length, 2·75; breadth, 1·87. (Gould.)
Hab.—Australia.

"This species of Petrel is very abundant on our coasts, and retires inland, sometimes to a distance of fifty miles, to breed. It nests in underground burrows, forming often large colonies, and resorting to the same breeding-place year after year. There is said to be an extensive nesting-ground of this kind in the Kaimanawa Ranges, in the Taupo-Patea country. At certain seasons the Natives collect large numbers of these birds and preserve them in calabashes, potted in their own fat, either for future use or as gifts to neighbouring tribes."—Buller.

130. Puffinus tristis. *Forst.*

Sombre Shearwater. Mutton-bird. Oii.

Brownish-black, lighter below, whitish on the chin; most of the under wing-coverts, white; bill, bluish-white, shading into black on the upper and lower margins; legs and feet, bluish-white, the membrane dark. In the young the bill is black, and the feet brownish.
L., 17; W., 12; B., 2; T., 2·1.
Egg.—White, stained with reddish-brown; length, 3·25; breadth, 2.
Hab.—South Island, South Pacific.

PROCELLARIA.

Bill, not longer than the head; nasal tubes, united, placed on the top of the bill, opening horizontally forwards; hind toe, reduced to a claw.
All parts of the world.

131. Procellaria parkinsoni. *Grey.*

TOA-NUI.

Brownish-black; middle parts of the bill, bluish-white; legs and feet, black.
L., 18; W., 13·75; B., 2; T., 2·1.
Egg.—White; length, 2·85; breadth, 2.

"This species is by no means uncommon in the Hauraki Gulf, resorting to the Little Barrier and adjacent islands to breed. Mr. Kirk, the well-known botanist, who has carefully explored these islands, informs me that he found both this and Gould's Petrel breeding in subterranean burrows. He observed that the two birds differed entirely in character—*P. gouldi* being extremely vicious, fighting savagely even with a dog when attacked, whereas *P. parkinsoni* would allow itself to be seized by the hand in its burrow almost without resistance."—BULLER.

132. Procellaria cinerea. *Gml.*

BROWN PETREL.

Above, brownish-cinereous; below, white; bill, yellow, with a blackish tip; feet, yellow.
L., 19; W., 13; B., 1·8; T., 2·4.

133. Procellaria glacialoides. *Smith.*

Above, pale-ash; below, white; quill-feathers, with some black near the tips; bill, pink; nasal tube, bluish; legs, pink; feet, blue.
L., 18·5; W., 13; B., 2; T., 2.

"There are several instances recorded of the occurrence of this beautiful Petrel on the New Zealand coast; and the above description is taken from a fine example which I picked up, in a dying state, on the sea-beach near the mouth of the Turakina River, and afterwards presented to the Colonial Museum.

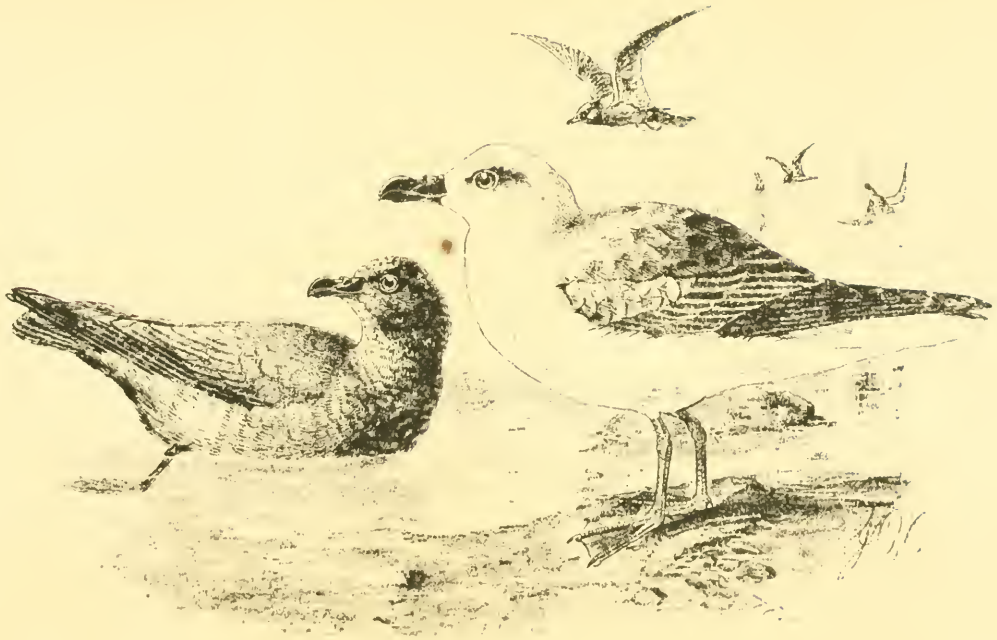
"The late Sir Andrew Smith, who was the first to discriminate the characters which distinguish this species from *Procellaria glacialis*, informs us that it is common on the South African coasts, and frequently enters the bays; also that it flies higher above the surface of the water than the last-named bird, and rests more frequently."—BULLER.

134. Procellaria capensis. *L.*

CAPE PIGEON.

Head, black; back, white, spotted with black; below, white.
L., 15; W., 10·3; B., 1·2; T., 1·65.

"So familiar is the so-called 'Cape Pigeon' to all who have made a voyage in the southern seas, and so fully has its history been



THE SOOTY PETREL.
PROCELLARIA FULIGINOSA.

THE WHITE-HEADED PETREL.
PROCELLARIA LESSONI.

recorded, that it seems scarcely necessary, in giving an account of the birds of a particular country, to do more than notice its occurrence.

"It is numerous off the New Zealand coasts at most seasons of the year; and in stormy weather it often approaches the land, following in the wake of the tossing vessel, hovering gracefully over the water, and occasionally alighting on the surface to pick up any floating substance that may arrest its attention. On one occasion, in comparatively smooth weather, a number of these birds attended our little steamer to the very mouth of the Wanganui River; but this occurrence was quite exceptional."—Buller.

135. Procellaria lessoni. *Garnot.*

White-headed Petrel.

(Plate XXXIII.)

Back and tail, ash; wings, black; head and under-surface, white, with a black line through the eye.

L., (?); W., 11·75; B., 1; T., 1·65.

Hab.—North Island.

136. Procellaria mollis. *Gould.*

Soft-plumaged Petrel.

Crown of head and all the upper surface, slate-grey, the feathers of the forehead margined with white; wings, dark-brown; before and beneath the eye, a mark of brownish-black; face, throat, and all the under-surface, white, interrupted by the slate-grey of the upper surface advancing on the sides and forming a faint pectoral band; bill, black; tarsi and base of toes and interdigital membrane, pale fleshy-white, the remainder black.

L., 13·5; W., 9·75; B., 1·25; T., 1·6.

Hab.—Southern Ocean, North Atlantic, New Zealand seas (Finsch).

137. Procellaria cookii. *Gray.*

Cook's Petrel.

Above, grey; forehead, cheeks, and below, white, with a brown spot through the eye; upper wing-coverts, brownish-black; under ones, white.

L., 12·5; W., 9·25; B., 1·55; T., 1·15.

"I have taken the above description from the type specimen in the British Museum, which was obtained off the New Zealand coast. The species appears, however, to be very rare; and I have never met with it, although Captain Hutton informs me that there is a specimen in the collection of the Rev. R. Laishley, at Auckland."—Buller.

138. Procellaria fuliginosa. *Kuhl.*

Sooty Petrel.

(Plate XXXIII.)

Brownish-black; bill and feet, black.

L., 15·25; W., 11·5; B., 1·75; T., 1·8.

139. Procellaria gouldi. *Hutton.*

Grey-faced Petrel.

Brownish-black, with a grey face; bill and feet, black.

L., 16·75; W., 13·5; B., 1·6; T., 1·6.

Egg.—White; length, 2·6; breadth, 1·85.

"It is very common on the Tasmanian and New Zealand coasts, and is undoubtedly the bird Mr. Gould refers to as the dark Petrel with a grey face, which he shot off the coast of Tasmania, and which he suggests might be *Procellaria macroptera* of Dr. A. Smith. According to that author, however, the bird he called *P. macroptera* has no grey face, but a white circle round the eye and reddish-brown legs and feet, in all of which respects it differs from the present bird."—Hutton.

140. Procellaria cærulea. *Gml.*

Blue Petrel.

Above, ash, blackish on the top of the head; forehead, white; below, white; tail, grey, with a white tip.

L., 11·5; W., 9; B., 1·25; T., 1·25.

Hab.—Both Islands. Fiji Islands.

"There is only one specimen of this Petrel in the Auckland Museum; and it does not occur, so far as I am aware, in any other collection in the colony. Mr. Gould, however, states that he found it 'very abundant off the north-east coast of New Zealand' in May, 1840, and that he observed it in every part of the ocean he traversed between the 40th and 55th degrees of south latitude, both in the Atlantic and Pacific."—Buller.

141. Procellaria affinis. *Buller.*

Plumage somewhat similar to that of *P. mollis*. The measurements, however, are different, *Procellaria mollis*, with a wing nearly an inch shorter than *P. affinis*, having a decidedly longer tarsus, and the tail a full inch longer.

L., 13; W., 10·5; B., 1·25; T., 1·2.

Note.—This species bears a general resemblance to *P. cookii*, but has longer wings and shorter legs. It also approaches *P. leucoptera*; but the latter, according to Gould, has the wing 2 inches shorter, although the other proportions are the same. The four allied species appear to form together a very natural group or sub-genus.

142. Procellaria antarctica. *Gml.*

Head, neck, and upper surface, dark brownish-grey, shading off to brown on the sides of neck and on the throat; wing-coverts and secondaries, white, forming a distinct alar bar; tail, white, terminally banded with brownish-black; under-surface, white; bill, black; legs and feet, brownish-grey.

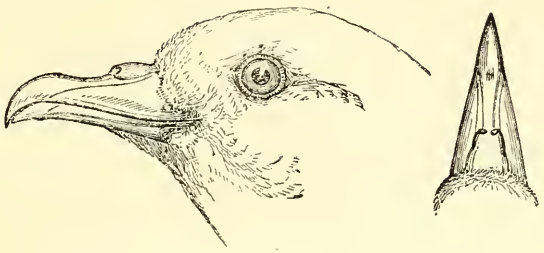
L., 14·4; W., 11·8; B., 1·5; T., 1·5.

Note.—This bird is the *Priocella antarctica* of Dr. Hector's notice in Trans. N. Z. Inst., Vol. IX., p. 464. In 1844 MM. Hombron and Jacquemot proposed separating the group *Priocella* from the typical *Procellaria*; but this division has not been generally adopted.

There is some doubt as to the propriety of admitting this species into our avifauna, the specimen described by Dr. Hector having been shot in lat. 45° S., long. 118° 9′ E., or about 1,000 miles west of Tasmania, and in the latitude of Otago. It was included among the birds of New Zealand in "The Voyage of the 'Erebus' and 'Terror;'" and one or more of the five specimens in the British Museum are said to have been captured in our seas, but the evidence is by no means complete.

PRION. *Lacep.*

Bill as long as the head, broad at the base, the upper mandible furnished near its edge with laminated serrations.



143. Prion turtur. *Soland.*

DOVE-PETREL. WHIROIA.

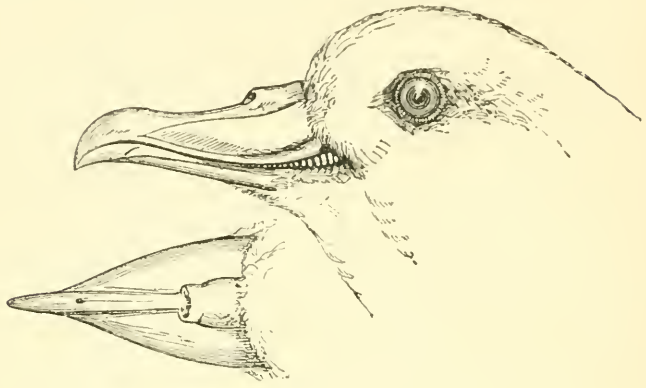
Above, light-ash; over the eye, white; below, white; shoulders and tip of the tail, brownish-black; chin, feathered.
L., 9·5; W., 6·75; B., 1; T., 1; width of bill, ·35.

"This charming little Petrel is extremely abundant off our coasts, and I have often observed flocks of them on the wing together numbering many hundreds. In boisterous weather it appears to suffer more than any other oceanic species from the fury of the tempest, and the sea-beach is sometimes found literally strewn with the bodies of the dead and dying. I have frequently watched them battling, as it were, with the storm, till at length, unable longer to keep to windward, they have been mercilessly borne down upon the sands, and, being unable, from sheer exhaustion, to rise on the wing again, have been beaten to death by the rolling surf or pounced upon and devoured by a hovering Sea-Gull. On picking them up and placing them in the pocket of my overcoat, they have soon revived, and in some instances have lived for several days on a diet of fresh meat, minced into small pieces. From the increased activity they always manifested on the approach of night, seeking the darker corners of the room and fluttering about in a very excited manner, with a rapid twittering note, I conclude that, whether at sea or on land, this Petrel is more nocturnal than diurnal in its habits. During the day the eyes were always half closed, imparting a peculiar fretful expression to the face. One circumstance interested me much, as illustrating the force of habit. On taking up one of these birds and inserting its bill in a glass of water, it at once commenced to move its feet, as if in the act of swimming or treading the waves. I repeated the experiment many times, and always with the same result."—BULLER.

144. Prion banksii. *Smith.*

BANKS'S DOVE-PETREL.

Like *turtur*, but with a broader bill, and the chin only half-feathered.
L., 11; W., 7; B., 1·2; T., 1·2; width of bill, ·45.



145. Prion vittatus. *Gml.*

BROAD-BILLED DOVE-PETREL.

Like *turtur*, but with the bill much swollen, and the chin nearly naked.
L., 11; W., 7; B., 1·5; T., 1·2; width of bill, ·6.
Egg.—White; length, 2; breadth, 1·5. (Gould.)

"Although closely resembling the preceding species in the colours of the plumage, this *Prion* may be readily distinguished by the peculiar form of its bill, which is much dilated at the base, and very conspicuously pectinated along the edges."—BULLER.

THALASSIDROMA. *Vigors.*

Bill, shorter than the head, weak, nasal tube long and elevated; first quill never the longest; tarsi, long and slender; hind toe, minute; tail, more or less forked.
All parts of the world.

146. Thalassidroma fregata. *Linn.*

WHITE-FACED STORM-PETREL.

Top of the head, hind part of neck, and a spot on each side of the breast, grey; back and wing-coverts, brown; upper and lower tail-coverts, bluish-grey.
L., 8·5; W., 6·25; B., ·7; T., 1·65.
Egg.—White; length, 1·5; breadth, 1·12. (Gould.)
Hab.—Both Islands.

"The White-faced Storm-Petrel appears to have a wide range over the southern ocean. It is not so plentiful, however, off the New Zealand coast as the next species, although the habits of the two birds appear to be precisely alike. Mr. Gilbert discovered it building in some of the small islands lying off Cape Leuwin, in South Australia, in December; and he met with young birds, almost ready

to leave their holes, on East Wallaby Island, a month later. Its egg is described as being pure white, and measuring 1·5 inch in length by 1·15 in breadth."—Buller.

147. Thalassidroma melanogaster. *Gould.*

Black-bellied Storm-Petrel.

Head, neck, back, wings, and tail, dark-brown; below, white, with a longitudinal brownish-black band.
L., 7·5; W., 6·5; B., ·75; T., 1·75.
Egg.—White; length, 1·5; breadth, 1·25. (Layard.)
Hab.—Both Islands; Indian Ocean.

"During stormy weather it often follows in the wake of the labouring vessel, and apparently for days together. I observed this myself, in 1856, during a severe gale, experienced off the Chatham Islands, which lasted nearly a fortnight. These Storm-Petrels followed us day and night; and it was some relief to the extreme monotony and misery of our situation (for our vessel was a mere schooner of 80 tons) to watch the movements of these fairy-like beings as they danced among the surging billows, running with fluttering wings in the hollow of the waves, and then hovering over their foaming crests with the lightness of summer butterflies. I observed that the same individual bird often remained in our wake for considerable distances, without ever resting on the water or changing its course for one moment, its powers of endurance being truly wonderful."—Buller.

148. Thalassidroma nereis. *Gould.*

Grey-backed Storm-Petrel.

Above, ash; head, brownish-ash; tail, ash, with a black tip; under-surface, white.
L., 6·7; W., 5·5; B., ·6; T., 1·25.
Hab.—Both Islands.

"The species is readily distinguishable from the other Storm-Petrels by the absence of white on the rump."—Buller.

PELECANIDÆ.

All four toes connected together by a broad membrane; throat, furnished with a pouch.

Dysporus. *Illiger.*

Bill, strong, straight; first and second quills the longest; tail, graduated; claw of middle toe, serrated; hind claw, rudimentary.
All parts of the world.

149. Dysporus serrator. *Banks.*

Gannet. Takapu.

White, with the top and sides of the head buff; quills and four middle tail-feathers, black.
Young.—Grey, spotted with white.

L., 36; W., 19; B., 5; T., 2.
Egg.—White, stained with reddish-brown; length, 3·1; breadth, 1·85.
Hab.—Both Islands; Australia, Cape of Good Hope.

"It is a powerful flier; and it is very interesting to watch it while in pursuit of its finny prey: poising its body for an instant in mid-air, it plunges headlong into the sea, with a velocity that makes the spray rise several feet, entirely disappearing under the surface for some seconds, and then springing upwards with the buoyancy of a cork; after which it rests on the water for several minutes, and then takes wing again, to renew the feat. In dull murky weather the snow-white plumage of this bird, rendered more striking by the black extremities of the expanded wings, makes it a very conspicuous object as it sails majestically overhead or scans the surface of the rippling waves."—Buller.

Phalacrocorax. *Brisson.*

Bill, straight, rather slender, hooked at the tip; second and third quills the longest; tail, rounded.

150. Phalacrocorax novæ-hollandiæ. *Gould.*

Black Shag.

Above, dark-green or blue-black; bronzy on the back; below, green-black; throat, and a band extending to the eye, white; a white spot on the thighs, and a few linear white feathers on the head and neck. When the breeding-season is over the white feathers on the head and neck are lost, and the throat is yellowish-white. The young are brown, mottled with white below.
L., 34; W., 13·5; B., 3·75; T., 2·25.
Egg.—Bluish-white, chalky; length, 2·5; breadth, 1·58.
Hab.—Both Islands; Australia.

"After comparing a large number of specimens, I feel no hesitation in keeping this form distinct from the well-known *P. carbo* of Europe, although the two species are closely related and have doubtless sprung from a common ancestor. In thus separating it, I am supported by Mr. Gould, who had frequent opportunities of investigating the subject in Australia and Tasmania, where this bird is very generally dispersed. The same view was taken by Mr. G. R. Gray in his latest arrangement of the group (Hand-list of Birds, 1871); and Mr. R. B. Sharpe has since adopted it in his classification of the specimens in the British Museum. . . . .

"The Black Shag is very common on our coasts and within the mouths of our tidal rivers. Along the ocean-beach it is generally dispersed singly or in pairs, but on the sand-banks it often congregates to the number of twenty or thirty. It walks with an awkward waddling gait, supporting itself in part with its tail, which is moved alternately to the right and left at every step. It has a very fetid odour; and a person approaching a flock of these birds on the leeward

side is made sensible of this at a hundred yards or more. Its usual attitude on the beach is one of repose, with the body inclined forward, the tail resting at full length on the ground, and the head drawn in upon the shoulders. When disturbed, it instantly stretches up its neck, listens, and watches attentively for a short time, and then, after a few ungainly steps, rises into the air with a laboured flapping of its wings, and flies off in the direction of the sea, into which it speedily plunges. When associated in pairs, they rise simultaneously, and fly off in company. Sometimes a large flight of them may be observed high in the air, performing apparently a migratory passage, and deployed in the form of a wedge, like a flight of Swans. . . . .

"Like all the other members of the group, the Black Shag is an accomplished diver, and obtains all its food in this manner. Twenty-five seconds appears to be the average duration of each dive, although the bird is capable of remaining under water for a much longer time. It is interesting to observe it facing a strong rolling surf, and diving under the breakers to avoid their force. When swimming in smooth water, it sometimes amuses itself by slapping its broad wings upon the surface, producing a sound that may be heard to the distance of half a mile. It rises from the water with apparent difficulty, and till it is fairly in the air it continues to strike the surface violently with the tips of its wings: this will doubtless account for the ragged appearance often presented by the ends of the primaries. It subsists on fish of various kinds; and I have observed one capture a good-sized flounder, and after killing it by nipping with its bill, and battering on the water, swallow it whole, the throat of this bird being capable of great expansion."—BULLER.

151. Phalacrocorax carunculatus. *Gml.*

ROUGH-FACED SHAG.

(Plate XXXIV.)

Blue-black; wings, green-black; below, an oblong spot on each wing, and some long feathers over each eye, white; base of the bill furnished with a yellow wattle; head, crested; skin round the eye, blue; between the eye and the mouth, orange; legs, scarlet.

L., 29·5; W., 12; B., 3·25; T., 2·5.

Egg.—Pale-green; length, 2·8; breadth, 1·9. (Layard.)

Hab.—New Zealand; Straits of Magellan, Falkland Islands, Crozet Islands, Kerguelen's Land.

NOTE.—See "Buller," Trans. N. Z. Inst., Vol. IX., p. 338, and "Hutton," Vol. XI., p. 332.

152. Phalacrocorax cirrhatus. *Gml.*

Top and sides of head, back of neck, nape, and rump, shining blue-black; glossed on the wings and scapulars with green; an oblong spot on each wing, some long linear feathers over each eye, and the whole of the under-parts, white; coronal feathers elongated, slender, and curved forwards; membrane at the base of the bill carunculated.

L., 29·5; W., 12; B., 3·75.

Hab.—Southern part of New Zealand.

153. Phalacrocorax magellanicus. *Gml.*

Head, neck, upper surface, and thighs, blue-black; shoulders, scapulars, and wing-coverts, green-black, except a narrow alar bar of white; chin, throat, and entire under-surface, except the neck, white. Head, crested; a few linear white feathers above the eye and on the upper part of the neck. Bill, brown; gular skin, bright orange; feet, flesh-colour, with black soles. In the immature bird the whole of the upper surface is dark-brown, glossed with greenish; no alar bar; under-parts, white.

L., 28; W., 10·5; B., 3·1; T., 2·1.

Hab.—Campbell Island.

154. Phalacrocorax melanoleucus. *Vieill.*

FRILLED SHAG.

Above, black; below, white; feathers of the neck, lengthened. In the young the abdomen is mottled with black.

L., 22; W., 9·25; B., 2·2; T., 1·6.

Hab.—Both Islands; Australia, Pelew Islands.

"The Frilled Shag, although dispersed over every part of Australia, is a comparatively rare species in New Zealand. It resorts to the rocky shores of bays and estuaries, as well as to inland rivers and lagoons; and it is said to breed in trees, several pairs being generally associated together."—BULLER.

155. Phalacrocorax chalconotus. *Grey.*

Entirely greenish-black, with flesh-coloured feet; head, crested.

L., 28; W., 11·75; B., 3·5; T., 2.

Hab.—South Island; Auckland Islands.

156. Phalacrocorax brevirostris. *Gould.*

WHITE-THROATED SHAG.

(Plate XXXIV.)

Black, with the throat and chin white; pouch, yellow. The young are entirely black.

L., 24; W., 9·5; B., 2·25; T., 1·4.

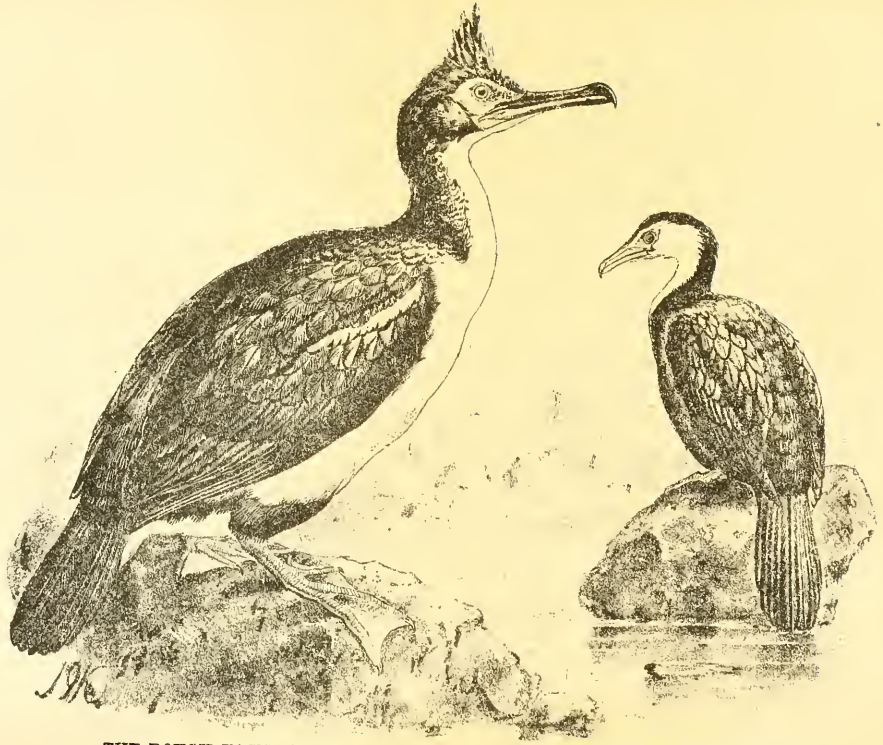
Egg.—Bluish-white; length, 2; breadth, 1·35.

Hab.—Both Islands. Peculiar to New Zealand.

"The White-throated Shag, which appears to be confined to New Zealand and the Chatham Islands, frequents the freshwater rivers and lagoons in all parts of the country. Like some of its congeners it is social or gregarious, obtains its subsistence by diving, and roosts at night on the branches of trees overhanging the water. Its food consists chiefly of eels and small fish; but I have also found the stomach filled with freshwater shrimps.

"It is very active on the wing, and often ascends to a considerable height in the air, and then sails in wide circles. On these occasions, owing to its narrowness of body and length of neck and tail, it has very much the appearance, when seen from below, of a flying cross.

"Large numbers are sometimes congregated in the roosting-place; and when disturbed or alarmed they rise into the air simultaneously and course about in a confused manner, resembling at a distance a flight of Rooks."—BULLER.



THE ROUGH-FACED SHAG.
PHALACROCORAX CARUNCULATUS.

THE WHITE-THROATED SHAG.
PHALACROCORAX BREVIROSTRIS.

THE SPOTTED SHAG.
(Male and Female.)
PHALACROCORAX PUNCTATUS.

PL. XXXV. *p.* 95.

157. Phalacrocorax finschi. *Sharpe.*

Differs from *P. brevirostris* in having a white spot on the wing-coverts.

Note.—The only known specimen is in the British Museum and the validity of the species seems doubtful.

158. Phalacrocorax varius. *Gml.*

Pied Shag. Kawau.

Above, greenish-black, brown on the back; below, white; thighs, greenish-black. The young birds are brown above, and white, mottled with brown, below. Between the eye and the gape, light-blue; a spot in front of the eye, bright-yellow.

L., 30; W., 11·5; B., 3·5; T., 2·25.

Egg.—Pale-blue; length, 2·4; breadth, 1·5.

Hab.—Both Islands; Australia.

"This species frequents the freshwater rivers, and is very seldom met with on the sea-coast. In other respects its habits do not appear to differ in any material point from those of *P. brevirostris*. Its usual station is a fallen tree or a stump projecting from the water; and it may frequently be seen spreading its wings to the sun, and sometimes remaining in that position for a considerable time."—Buller.

159. Phalacrocorax punctatus. *Sparrm.*

Spotted Shag.

(Plate XXXV.)

Above, grey, with black spots; tail and thighs, black; below, lead-grey; head and neck, black, with a white stripe down each side of the neck; head, crested; legs and feet, flesh-colour. In the young the upper surface is grey and the lower white.

L., 30; W., 9; B., 2·5; T., 2.

Hab.—Both Islands. Peculiar to New Zealand.

"This beautiful representative of the Crested Shags is abundant on the coast of the South Island, but is seldom met with on the northern side of Cook Strait. I observed a party of three at the mouth of the Waikanae River in January, 1864; two young birds were killed in Wellington Harbour in the winter of 1865; and another was shot in the Gulf of Hauraki, near Auckland: and these are the only instances I know of its occurrence in the North Island.

"It associates in large flocks, and frequents the open sea in the vicinity of the coast, as well as the mouths of estuaries and sounds, subsisting on fish and crustaceans, which it obtains by diving. It is apparently a very inquisitive bird; for I have often observed a flock of them make up to a steamer going at full speed, and fly round her, sometimes returning a second time to reconnoitre. It breeds on the high shelving rocks on the coast or within the sheltered arms of the sea, the nests being arranged in successive tiers of considerable extent, and as closely grouped together as the form of the rocks in the locality chosen as a breeding-station will admit of. I have never had an opportunity of examining the eggs; but I understand that three is the usual number."—Buller.

160. Phalacrocorax featherstoni. *Buller.*

CHATHAM ISLAND SHAG.

(Plate XXXVI.)

Head, upper portion of neck, and the whole of the nape, with the vertical and occipital crests, shining indigo-black; sides and hind part of neck, ornamented with filamentous white feathers having spatulate tips; mantle, olivaceous-brown, glossed with green, each feather with a terminal spot of black; back and upper tail-coverts, indigo-black; lower part of fore-neck, and middle portion of abdomen, beautiful grey; sides of the body and rest of under-parts, indigo-black. Bill, dark-brown; legs, orange-yellow.

L., 22; W., 9; B., 2·6; T., 1·6.

Hab.—Chatham Islands.

"This beautiful addition to the ornithology of our country was one of the novelties brought from the Chatham Islands by Mr. Henry Travers on his return from the exploratory visit mentioned on a former page. It was referred by Captain Hutton to *Graculus africanus;* but, having had an opportunity of examining the original specimen, which was courteously forwarded to me through the Colonial Office, I am satisfied that it represents a totally new and hitherto unrecorded species.

"I have already associated the name of Mr. Henry Travers with one of the new species discovered by him; and, in assigning a distinctive title to this bird, I desire to pay a slight tribute to one who, having originally assisted in founding a colony at the Antipodes, has devoted more than thirty years of his life to its political affairs, and now fills the important office of its Agent-General in Great Britain. I do this the more readily as Dr. Featherston has always used his influence to encourage and promote scientific researches in New Zealand, while he has manifested a special interest in the progress and success of the present work."—BULLER.

161. Phalacrocorax glaucus. *Hombr. et Jacq.**

Uniform blackish-brown, glossed with green on the upper surface; back, rump, and thighs, shining steel-blue. Bill, yellowish-brown; legs and feet, pale-orange.

L., 20; W., 12·5; B., 3·75; T., 2·75.

Hab.—Extreme southern part of New Zealand.

162. Phalacrocorax nycthemerus. *Cab.*

Crown, sides of the head, and vertical crest, shining blackish-green, changing to brilliant steel-blue on the nape and neck all round; back, rump, upper tail-coverts, and thighs, dark steel-blue, lightly glossed; the whole of the mantle and upper surface of wings, glossy blackish-green, fading into the steel-blue on the shoulders and back; the wing-coverts with narrow velvety margins, and the middle ones crossed by a white alar bar about two inches in length. An angular patch of white covers the chin and throat, and the whole of the under-parts are pure white, the termination of the dark metallic blue being distinctly defined across the crop. The crest is vertical, and consists of soft linear feathers, the longest measuring 1·5. On the face and sides of the head there are scattered white filaments during the breeding-season.

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* Voy. Pôle Sud, Zool., iii., p. 127, pl. 31, fig. 1 (1853).

THE CHATHAM ISLAND SHAG.

PHALACROCORAX FEATHERSTONI.

PL. XXXVI. *p.* 96.

The female differs in having the plumage blackish-brown instead of metallic green, but glossed with green on the head, neck, back, and rump. There is no white on the wings, the coverts being dull-brown, with paler margins; tail-feathers, yellowish-brown, with paler margins. Feathers of the vertex lengthened, but no appearance of a crest.

L., 27; W., 11; B., 3; T., 2.

Hab.—Macquarie Islands.

There are two specimens of this beautiful bird in the Otago Museum.

Phaeton. *Linn.*

Bill, as long as the head, broad and dilated at the base; culmen, elevated, and the sides compressed; lateral margins more or less serrated; wings, long and pointed, with the first quill the longest; tail, moderate, and graduated, with the two middle feathers lengthened and linear; tarsi, shorter than the middle toe, strong, and covered with small scales.

163. Phaeton rubricauda. *Bodd.*

Red-tailed Tropic-bird. Amokura.

Satiny-white, with a delicate rosy blush; a broad black mark through the eyes; two lengthened plumes in the middle of the tail, bright-red. Bill, coral-red.

L., 37; W., 13·75; B., 3·5; tail, 19 (the lengthened plumes extending 15).

Hab.—Temperate and warmer latitudes of the Indian Ocean and South Seas. Occasional visitant.

"This bird is well-known to the Ngapuhi Tribe at the North, under the name of Amokura; and they set a high value on the long red tail-feathers, which they exchange with the southern tribes for greenstone. Almost every year, after the prevalence of easterly gales, some specimens are washed ashore (generally dead) at the North Cape or in Spirits Bay. The Natives of that district go out systematically to hunt for them at these periods. Owing to their rarity, these plumes are more prized than those of the Huia or Kotuku; and in one instance a valuable slab of *pounamu* was given by a Hawke Bay chief in exchange for three feathers, one of which is now in possession of the Manawatu Natives."—Buller.

Plotus. *Linn.*

Bill, longer than the head, straight, and very slender, with the sides much compressed to the tip, which is very acute, the lateral margins finely serrated, and the gonys long and slightly ascending; wings, long, with the second and third quills equal and longest; tail, long, and rounded at the end; tarsi, half the length of middle toe; feet, webbed.

164. Plotus novæ-hollandiæ. *Gould.*

Southern Darter.

Crown, nape, and shoulders, blackish-brown, mottled with white; back and tail, black; wing-coverts and scapulars, varied with white; a line of black down the sides of the neck; under-parts, buffy-white.

L., 40; W., 14; B., 4·25; T., 2.

Hab.—South Australia and New South Wales. Only one known occurrence in New Zealand.*

* Trans. N. Z. Inst., Vol. VII., p. 217.

Tachypetes. *Vieill.*

Bill, longer than the head, hooked at the tip; wings, very long and narrow; tail, long, forked; tarsi, very short, half-covered with feathers; membrane between the toes, deeply indented.

165. Tachypetes aquilus. *L.*

Frigate-bird.

Above, dark-brown; head and neck, white; throat, tinged with reddish-buff; breast, flanks, and vent, dark-brown; abdomen, white.
L., 36; W., 23·5; B., 5; T., ·8.

"So far as I am aware, there is only one recorded instance of the occurrence of this 'Vulture of the sea,' as it has been appropriately termed, on the New Zealand coast. In February, 1863, a fine specimen was taken alive at Castle Point, on the east coast of the Wellington Province, and forwarded to Mr. George Moore, who very generously presented it to me; and this unique example, of which a description is given above, is now, with the rest of my collection, in the Colonial Museum. . . . .

"Till a comparatively recent date the only knowledge we possessed of the Frigate-bird was that afforded by those who had voyaged in the tropical seas and studied the bird in its distant haunts; but in the early part of 1871 a pair of live ones, the gift of Captain Dow, were received at the Zoological Society's Gardens; and Home naturalists had thus an opportunity of studying this remarkable form in a living state. But when I first looked on these captives, moping gloomily on their perch, with a mere dish of water beneath them, and their noble wings folded up in languid misery, I could not help pitying from my very heart these captives from the ocean, whose fate seemed almost harder than that of the 'lord of the plains' on the opposite side of the Gardens, condemned to pass his life within an iron railing only ten feet square. From observing the Frigate-bird under such circumstances it is impossible to form any adequate idea of what it is in a state of nature, where its whole individuality depends on its wonderful speed, its long powers of endurance, and the graceful aërial evolutions it is able to perform. Audubon, who was familiar with it in its native element, gave a spirited drawing of it dashing headlong through the air in pursuit of its quarry. In the *Field* of September 23, 1871, there is an equally characteristic figure of the same bird as it is to be seen in the Gardens (accompanied by an excellent description)—resting moodily on its feet, with the wings drooping, and the head drawn closely in upon the shoulders. . . .

"It would seem that this species frequents all the seas of the warmer parts of the globe, and especially the tropics, assembling in large flocks during the breeding-season, and dispersing over the wide

ocean again as soon as the parental obligations are discharged. Audubon found them breeding in large numbers in the Gulf of Mexico and on the Florida Keys."—BULLER.

166. Tachypetes minor. *Gml.*

SMALL FRIGATE-BIRD.

Black, with bluish metallic reflections, more or less distinct; lanceolate feathers of the back and on the sides of the breast, brilliant, and changing from purple to green according to the light; upper wing-coverts and sides of the body, tinged with brown.
L., 36; W., 23; B., 4·25.

"This smaller species of Frigate-bird, which roams over the seas washing the shores of the more tropical parts of Australia, has occurred at least once as a straggler on the New Zealand coast, and is therefore entitled to a place in our list. A fine adult male was taken on the Wakapuaka beach in the early part of 1861; and the skin, which was fortunately preserved, now forms part of the collection of birds in the Nelson Museum."—BULLER.

PTILOPTERI. PENGUINS.

Wings, short, covered with scale-like feathers; tail, composed of narrow, rigid feathers; tarsi, very short; anterior toes united by a web; hind toe very small and united to the tarsus.
Southern Hemisphere.

APTENODYTES. *Forst.*

Bill, longer than the head, rather slender; lower mandible covered with a smooth naked skin; tail, very short; tarsi, covered with short feathers.

167. Aptenodytes pennantii. *Gray.*

The whole of the head, nape, throat, and upper fore-neck black; hind-neck and entire upper surface bluish-black, each feather centred with pale-blue; on each side of the nape a large round spot of golden yellow, continued downwards in narrow diagonal stripes which meet and spread on the fore-neck, fading away towards the breast; all the under-parts white. Bill, black; the sides of the lower mandible reddish-brown; feet, black.
L., 35; W., 11; B., 4·25.
Hab.—Stewart Island; South Sea Islands.

EUDYPTES. *Vieill.*

Nostrils linear, the frontal feathers advancing to the opening; tail, rather long.

168. Eudyptes antipodum. *Hombr. et Jacq.*

GREAT PENGUIN. HOIHO.

Top of the head, yellow, finely streaked with black, margined by a broad light-yellow band, which runs from the eye to the back of the head; sides of the face and throat, delicate light greyish-brown, tinged with yellow below the gape; sides of the neck, greyish-brown, shading into blue-black at the back of the neck; back, blue-black; wings, the same, tipped with a band of white; tail, brownish-black; under-surface, white.
L., 31·5; W., 9; B., 3; T., 1·2.
Hab.—South Island.

169. Eudyptes pachyrhynchus. *Gray.*

CRESTED PENGUIN. TAWAKI.

(Plate XXXVII.)

Head and throat, black, with a plume of elongated yellow feathers over each eye; back, blue-black; below, white; feet, red.

L., 29; W., 9; B., 3; T., 1·25.

Hab.—Both Islands.

"This fine Crested Penguin is occasionally met with on the shores of both North and South Islands; but it is by no means numerous; and nothing is at present known of its breeding-stations.

"A specimen caught in the castaway wreck of a brig near the Wellington Heads, in 1856, was brought to me in a moulting condition, and presented a very singular appearance, the plumage peeling off, as it were, in large patches, and disclosing to view a short undergrowth of new feathers: the whole process was completed in two or three days."—BULLER.

170. Eudyptes chrysocomus. *Forst.*

YELLOW-CRESTED PENGUIN.

Crown, sides of head, throat, and hind part of neck, black; rest of upper surface, bluish-black, each feather with a central streak of pale-blue; from base of upper mandible, on each side, a broad line of pale golden-yellow passes over the eyes and is continued beyond in a crest of fine pointed feathers extending two inches beyond the head. Under-parts, silvery-white.

L., 27; W., 8·5; B., 2·75; T., 1·5.

171. Eudyptes filholi. *Hutton.*

Similar to *E. chrysocomus*, but "easily distinguished by the superciliary yellow streaks commencing behind the termination of the culmen, instead of between the termination of the culmen and the nostrils, and by the dark colour of the back advancing on the sides of the lower neck. From *E. chrysocomus* it is also distinguished by the narrowness of the bill, and the different shape of the black mark on the under-surface of the apex of the wing." (Hutton.)

L., 23; W., 5·75; B., 2; T., 1.

Hab.—Campbell Island.

172. Eudyptes schlegeli. *Finsch.*

ROYAL PENGUIN.

Forehead, bright canary-yellow, continued backwards into a fine coronal crest of that colour, with scattered black shaft-lines; hind part of head, and all the upper surface, blue-black; edges of the mandibles washed with yellow; face, sides of the head, throat, and all the under-surface, silky-white; the fore-neck clouded with grey. Bill, reddish-brown.

L., 29; W., 6·5; B., 2·75 (culmen, 2·5).

Egg.—White; length, 3·25; breadth, 2·4.

Hab.—Campbell Island.

NOTE.—There are some fine specimens of this bird in the Otago Museum.

173. Eudyptes vittata. *Finsch.*

Top of the head, brown, inclining to bluish on the front, and passing into pale-brown towards the back of the head; sides of the head and throat, brown, with a broad superciliary white streak; upper part of neck and back, brown, inclining to bluish in places; under-surface, pure white. Bill, reddish-brown; feet, red, with blackish webs.

L., 28; W., 7·1; B., 2·32 (culmen, 2·1).

Hab.—Southern extremity of New Zealand.

THE CRESTED PENGUIN.
EUDYPTES PACHYRHYNCHUS.

THE BLUE PENGUIN.
EUDYPTULA MINOR.

PL. XXXVII. *pp.* 100, 101.

"*E. vittata*, if indeed a true *Eudyptes*, is easily distinguished from all other members of the Penguin group by its broad white superciliary streak, which runs from the base of bill to the back of head, but which does not consist of elongated feathers."—Finsch.

174. Eudyptes atrata. *Hutton.*

Black Penguin.

Above, from the top of the head to the tail, blue-black; sides of the head, throat, and whole under-surface, jet-black. A thin, interrupted yellow line from the bill, over the eye, and produced posteriorly into a long yellow crest. Bill, pale brownish-red; feet, black, inclining to reddish-black on the toes.

L., 27; W., 7·7; B., 2·75 (culmen, 2·55).

Hab.—The Snares. (A single specimen only.)

Distinguished by its massive, deep bill, its very small hind toe, and long tail. About the same size as *E. pachyrhynchus*.—Hutton.

"This species cannot be confounded with any other, regard being paid to the jet-black coloration of its under-surface."—Finsch.

Eudyptula.

Nostrils, rather rounded, placed in the middle of the bill; tail, very short.

Australia.

175. Eudyptula minor. *Forst.*

Blue Penguin. Korora.

(Plate XXXVII.)

Above, blue; below, white.

L., 18·5; W., 5·75; B., 1·9; T., ·8; height of bill, ·75.

Egg.—White; length, 2·2; breadth, 1·75.

Hab.—Both Islands.

"This species occurs all round our coasts, and resorts in large numbers to the Island of Kapiti, in Cook Strait, and probably to other islands of similar character, to breed and rear its young. It is abundant also in the seas surrounding Tasmania, in Bass's Strait, and on the south coast of Australia generally. Mr. Gould found it breeding on the low islands in Bass's Strait from September to January, and states that in these localities the ground is 'completely intersected by paths and avenues; and so much care is expended by the birds in the formation of these little walks that every stick and stone is removed, and in some instances even the herbage, by which the surface is rendered so neat and smooth as to appear more like the work of the human hand than the labour of one of the lower animals. . . . . A considerable portion of the year is occupied in the process of breeding and rearing the young, in consequence of its being necessary that their progeny should acquire sufficient vigour to resist the raging of that element on which they are destined to dwell, and which I believe they never again leave until, by the impulse of nature, they in turn seek the land for the purpose of reproduction. Notwithstanding this care for the preservation of the young, heavy

gales of wind destroy them in great numbers, hundreds being occasionally found dead on the beach after a storm; and when the sudden transition from the quiet of their breeding-place to the turbulence of the ocean, and the great activity and muscular exertion then required, are taken into consideration, an occurrence of this kind will not appear at all surprising. . . . . Its powers of progression in the deep are truly astonishing; its swimming-powers are in fact so great that it stems the waves of the most turbulent seas with the utmost facility, and during the severest gale descends to the bottom, where, among beautiful beds of coral and forests of seaweed, it paddles about in search of crustaceans, small fish, and marine vegetables, all of which kinds of food were found in the stomachs of those I dissected.' . . . .

"I once had a live one in my possession for a considerable time; and, although very savage when first taken, severely punishing the captor's hands with its beak, it soon became quite tame, and exhibited, for such a bird, a remarkable degree of intelligence.

"On land its mode of progression is very ungainly, and it frequently topples over when attempting to run. Its usual attitude is that represented in our plate; but it sometimes crouches low, with its breast nearly touching the ground. The sea, however, is its natural abode; and on observing its movements there it is at once manifest that the flippers are intended to perform the office of fins or paddles for propelling the body through the water. On the surface it swims low and in a rather clumsy fashion; but the moment it dives under it trails its legs behind like a bird on the wing, and, using its flippers in the manner indicated, glides forward with the same ease and freedom that the Sea-Gull cleaves the air above it. In clear, deep water I have watched its graceful evolutions with considerable interest; and I have been astonished at the length of time the bird could remain under before rising to the surface to breathe."—Buller.

176. Eudyptula undina. *Gould.*

Little Penguin. Korora.

Above, blue; below, white.
L., 14·5; W., 4·75; B., 1·25; T., ·8; height of bill, ·5.
Egg.—White; length, 2·1; breadth, 1·6.
Hab.—Both Islands; Australia.

"This Penguin is equally, if not more abundant on our coasts than the preceding one; and the foregoing account is applicable to both species."—Buller.

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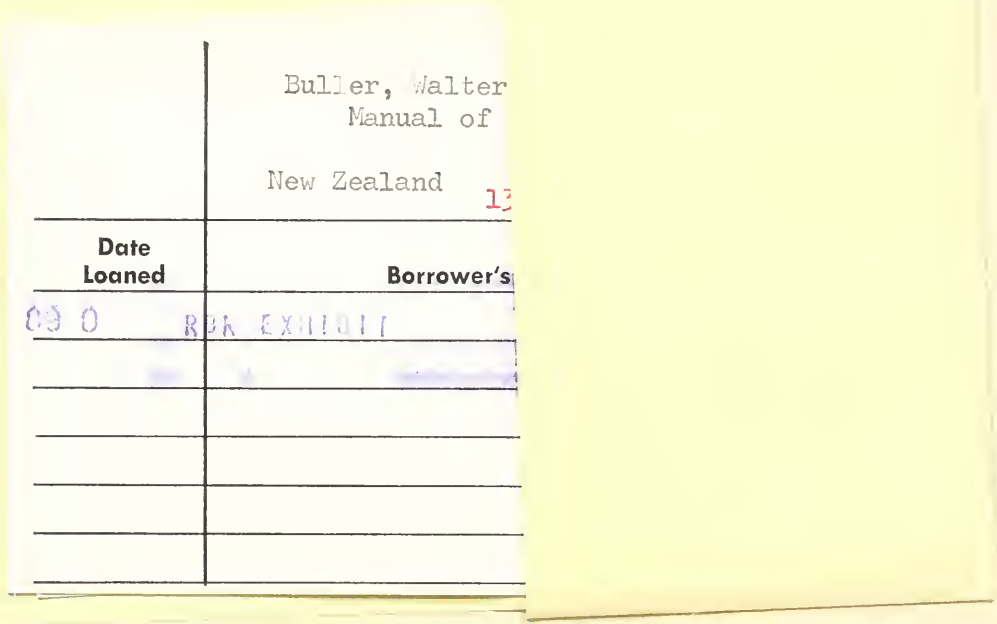
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